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BEHAVIOR, KNOWLEDGE, FACT

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Behavior Knowledge Fact

By

ARTHUR F. BENTLEY

Author of

THE PROCESS OF GOVERNMENT

RELATIVITY IN MAN AND SOCIETY

LINGUISTIC ANALYSIS OF MATHEMATICS



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ARTHUR F. BENTLEY

PREFACE

Knowledge, whether regarded as the wisdom of the individual or as the accumulated intellectual treasure of the many, is always in some sense the behavior of men. In this assertion, however, we find ourselves lacking a clear-cut and dependable specification for the word 'behavior.' Behavior itself is before our consideration only as something known, or in process of becoming known, through the technical advances of science.

Many of the behaviors of men present themselves to us in the highly specialized and long-enduring forms called 'social.' It is but a few generations since research first came to recognize the importance of these socializations. Prior to that time the world had possessed intimations of them, indeed, but not usable knowledge. Their more recent exploration by the psychologies and the sociologies has not yet given them the clarification they need. Instead, the search has brought to light fresh difficulties and confusions in the underlying hypotheses which the social and psychological sciences adopt in making their observations and framing their interpretations.

The sociologists began by directly appropriating various 'mental' presentations and data just as they found them set forth in the older psychologies. Soon, however, the discoveries of physiology, neurology, and other branches of biological science began to transform the psychologies. Nor was that all. The new social facts reacted upon the psychologies with demands for still further transformations. Again, within psychology proper, the behaviorists, directing their attention to the intimate union of language and thought—itsself one of the earliest philosophical observa-

tions of man—increased the disturbance; attempting to compress language into that specialized form which their mechanistic creed regards as truly scientific, they found themselves led into procedures which now threaten to engulf all of their original construction. As the case stands today, sociologists find little security in the data offered them by the psychologists; psychologists, in their turn, are far from a state of ease in their dealings with socializations. The confusions are great, and increasing.

Behind all this, both for psychology and for sociology, lie problems that arise from the transformation of knowledge in the new physics—a transformation as great as that through which knowledge passed in the days of Newton. The physical sciences make continuous use of the equations of relativity; data which formerly they treated as basic fact, they must now deal with in terms of probabilities; the old reliable particles of matter have come in many branches of physical inquiry to appear rather as derivatives from, or as alternatives to, other possible readings of the experimental data, than as certainties in their own right. Mind-substance had already vanished as a direct object of research, but now the coupled matter-substance vanishes along with it. As matter-particles become questionable, behavior-particles become questionable too. For the psychologies and sociologies this shift in the background of physical inquiry—these new wave theories and relativity theories—will have, in the end, as radical an import as they have had for physics itself. Such is the status of our present endeavor towards social and psychological knowledge.

Our investigation begins with an appraisal of psychology as itself a form of knowledge. Here it is at once apparent that we have to deal, not with a single coherent science of psychology, but with many variant psychological constructions. The psychologists, ever since their science began, have taken their phenomena as observably present to them in temporal form—as extending, that is to say,

through 'time' in successions or durations—but without the characteristic of spatial extension. Their 'psychic' phenomena appeared thus to be 'non-spatial,' whatever such a term might mean. Today, attempts at spatial presentation are common; so common, in fact, that many types of them are found. For the purposes of the present inquiry, the requirement, then, is to recognize the prevalence of space-forms along with time-forms as frameworks of psychological inquiry, wherever and whenever they arise, just as we should proceed if the subject-matter of our study were physical science or vital science in place of psychological science. We have to identify, for the various psychologies, the leading types of spatial and temporal construction, to classify these as best we can, and to appraise their status as constructional aids to knowledge.

In such appraisal we find ourselves involved in difficult issues concerning the status of knowledge with respect to behavior, and of both of these with respect to language, itself a form of behavior, and to fact. If we desire to proceed in further studies under free scientific hypothesis, rather than to depend upon some sharply determinate conventional or philosophical control, we must go far afield in order to secure postulation adequate to our needs. Part II undertakes this necessary inquiry into a form of postulation which will permit the study of men and things in systems, in a manner in harmony with those other forms of research and knowledge that are before us in the old established sciences.

With this much accomplished, we proceed in Part III to the definite work of observation in the field of behaviors, free, now, from the narrowly psychological leading-strings which have descended to us from the past. Our purpose here is to identify, describe, and name certain behaviors of the 'social' type. To the examination of institutions by the aid of specifically sociological techniques, we do not here attain. Observable phases of social organizations and materials for their factual presentation will occupy our attention, and

along with these, certain immediately important questions of procedure in research.

At every step in such inquiries the investigator faces situations in which 'words' and 'facts' are complexly tangled. Where 'facts' can be approached only through an elaborate technique of 'words,' and where the 'words' that must be used are far from reliable as certifiers of 'fact,' the perils of analysis are peculiarly great. In warning against such perils free use is made of single quotation marks to signalize words and phrases in contexts in which the dangers of misinterpretation are most serious. The instances include both those in which readers may accord widely variant specific meanings to the 'words' that are used and those in which the indicated 'facts' may be taken in conflicting systems of linguistic construction and organization. The single quotation marks are cautions against the errors of understanding that may thus easily arise; they serve to hold the most significant issues open until such time as a more adequate functional organization of 'word' to 'fact' can be attained.

Since the problems with which we are to deal lie in the borderlands of scientific enterprise, it may well be that 'science' itself is a word which should be thus earmarked for continuous cautionary attention. Science, in our generation, is a living growth, so varied in its manifestations that the salient characteristics it presents to the view of one investigator are often far removed from those it presents to others. Limited definitions and descriptions help little, since the widest attitudes of construction are involved. For this particular word, nevertheless, I rarely use the indicated marks. I can avoid them only because I take repeated occasion to stress that by 'science' I emphasize always system in knowledge and in factual organization, and coherence in linguistic presentation—all of this as event in progress in human behavior. My inspection of science itself is 'dura-

tional,' and so also of all knowledge; the durational construction is persistently maintained.

Essential to the inquiry is the distinction that is developed between physical, vital, and behavioral science: not as a distinction based upon differences among 'things'; not as a rigid division of departments of knowledge; not with authoritarian implication for any one of them as over against the others; but, throughout, as techniques of inquiry by means of which men, midway in the history of men, do the best they can to solve their greater problems. This distinction, however, is not given prominence in the formal organization of the book. Quite deliberately on my part, it is allowed to work itself out as we advance, and to stand, within its direct setting of inquiry, for whatever its value may be therein.

In view of the specific criticisms I have felt compelled to direct against John Dewey's characterization of psychology as science, it is proper for me here to give strong expression to my affiliation with him in broader issues of inquiry and method. My obligation to him is great and of long standing—far greater than I have anywhere in the text found opportunity to display.

CONTENTS

I. PSYCHOLOGY AS KNOWLEDGE.

	PAGE
I Laboratory Preparation	3
II Language, Science, and Psychology.....	6
III Selection of Specimens.....	13
IV Dominant Linguistic Techniques.....	22
V Linguistic Differentiations within Psychology	26
VI Psychological Spaces and Times as Linguistic Techniques	33
VII Preliminary Exhibits: Dashiell, Hunter, C. K. Ogden.....	38
VIII Approach to Appraisal.....	50
IX Movement-Spaces: Watson, Washburn, Weiss	52
X Action-Spaces: Woodworth, Dunlap.....	66
XI Mind-Language Reconstructions: Dewey, M. Bentley	74
XII The Apprehensional Space-Segment: Kantor	89
XIII Recapitulation	100
XIV 'Isolationality': Language and Fact.....	105
XV Prolegomena to a Psychology: Titchener.....	112
XVI Terminological Suggestion	127

II. KNOWLEDGE AND FACT.

XVII The Problem of Postulation.....	131
XVIII Language and Knowledge.....	139
XIX Experience and Fact.....	166

III. SOCIAL FACT.

1. *Selective Observation.*

	PAGE
XX The Social as a Field of Inquiry.....	187
XXI The Visibility of the Social.....	198
XXII The Factuality of the Social.....	216
1. Factuality	
2. Sociality	

2. *Observable Behaviors.*

XXIII The Dicaud	229
XXIV The Communact	249
XXV The Communicane	258
XXVI Objects and Organisms in System.....	283

3. *Problems of Technique.*

XXVII Behavioral Space-Time	308
XXVIII The Psychological and the Sociological.....	322
1. Position to be Established	
2. Preliminary Considerations	
3. Psychological Technique	
4. Diagrammatic Comparison of Postulations	
XXIX The Psychological and the Sociological (continued)	345
5. Sociological Technique	
6. Thinking, Thought, and Thoughts	
7. Behavior as Postulation	
XXX Sociological Obverse and Converse.....	374
XXXI Conclusion	385

CLASSIFICATORY DEVICES

Preliminary Tabulation of Psychologies.....	19
Summary of Psychological Construction Forms.....	100
Aspectual Analysis of F, E, L, and K.....	152
Communicative Behaviors, Generic and Specific.....	265
Disjunctive Data vs. Observable Functions.....	342

PART I

PSYCHOLOGY AS KNOWLEDGE

I. LABORATORY PREPARATION

Our preliminary task is to appraise the status of psychology as itself a form of knowledge. Omitting such an appraisal we remain at the mercy of whatever conventions or academic adaptations have befallen us; the dangers are great since variations in psychological construction affect directly or indirectly all our materials of inquiry—the behaviors, knowledges, and facts. Our purpose here is in no sense to make contribution to psychology; it is rather to inspect impartially the existing psychologies as we find them, with a view to their organization in whatever way will be most serviceable and most dependable for our study.

In such inquiry the first duty of the investigator is to obtain definite phenomena for examination. The word 'psychology' covers many varieties of laboratory experimentation and behavioral observation, including an older form known as 'introspection'; it covers also a multitude of practical activities, and beyond these the doings of many charlatans. The word 'knowledge' is similarly defective in what it brings to our attention; its current uses imply many different types of phenomena and many different points of view in the description of phenomena, and it presents no reliable scheme of application when we use it. In the cases of both 'psychology' and 'knowledge,' therefore, names of closer restriction must be obtained.

It is legitimate, and fully in accord with normal procedure in research, to limit ourselves within each range to forms which we can most definitely study. In place of 'knowledge' we may give our attention to 'scientific knowledge,' to 'science,' understanding by 'science' the best, the most efficient, the most dependable knowledge we possess—the typical knowledge. In place of 'psychology' in its broader applications we may confine ourselves to 'psy-

chology as science'—psychology that earnestly seeks to acquire the scientific form, to become itself a science. In limiting ourselves in this way, we at once free ourselves from many generalities of appraisal, and in particular from all valuations of the philosophical order.

However, even after this limitation our selection of phenomena is far from being precise. We have still to make sure that when we use the names 'science' and 'psychology as science' we have phenomena before us which we can fixate, and to which we can point precisely at each stage of our advance.

If we should search the current literature of discussion in order to identify in each case just what the phenomena are with which the writer attempts to deal when he speaks of 'knowledge' or of 'science' or of 'psychology,' we should find, I believe, two main types of specification. One of these orients its phenomena with respect to 'fact,' and envisions 'science' as report, reproduction, reflection, or display of 'fact.' The other envisions its phenomena as complex systems of 'meanings,' wherein the interpretative construction as it is developed by the 'human mind' has the greatest prominence. The difficulty in both of these cases is that a great amount of very dubious speculative construction is implied by them, and that it is only in the vaguest way that the materials under examination—the sciences and the knowledges themselves—can be allotted that form of observability which they ought to have, if they are to receive thorough inspection and appraisal.

In the endeavor to fixate phenomena for examination I shall avoid both of these approaches, and shall begin with the commonplace observation that science as a phenomenon is something that passes current from man to man, and that its passage is in the form of language. I observe further that in both types of attempted specification mentioned above—that in which an orientation to 'fact' is used, and that in which a complex of 'meanings' is stressed—linguistic communication is functionally involved, and deeply so. I

shall therefore select 'language' directly as the phenomenal form in which science and knowledge present themselves to us, and shall proceed to assemble my materials in the linguistic form. I shall take this 'language' as itself a 'conveyance of meanings,' without any preliminary severance of the 'conveyance' from the 'meanings'; and I shall take it as bound in equal intimacy with all of our presentations of 'fact'—indeed, with all 'fact' with which we can be concerned: fact as 'known,' as 'usable,' as 'in process of being known and used.'

To take both 'science' and 'psychology' as phenomenally present in language is equivalent to making a *preparation* of our materials for study. It is to fixate these materials in a certain status in which they can best be examined. We have a laboratory preparation of materials before us—a linguistic preparation—and we propose to learn whatever we can about them by examining them in that form.

The suggestion of a laboratory has further value. A laboratory in the most significant sense is not a building of brick or stone, containing instruments perhaps of steel or of glass. Rather it is a region of standards and techniques of research, where selected happenings in the world are brought into specialized forms and given observation under careful conditioning to permit their more accurate knowledge. For our purposes we may adopt certain of the well-known laboratory standards. We gather a collection of materials, in this case a collection of psychologies; we make sure that we have soundly representative samples; we isolate them in a place of special research; we equip ourselves with the best instrumental aids we can find; we seek adequate illumination; and we proceed to the dissection of our materials under whatever ideals of maximum observational impartiality we may command.

Before arraying our materials, however, we must consider in more detail the situations of language, science, and psychology lying around us, as we participate in them day by day in work and life.

II. LANGUAGE, SCIENCE, AND PSYCHOLOGY

Titchener once casually remarked that "all science is talk, but not all talk is science." His immediate point was to emphasize his own highly specialized form of expression as over against the many undisciplined and opportunist discussions of the market-place and the schools. However, he found his pen moving to the further assertion that "science is a particular kind of writing or talking." Less explicit remarks of this kind are common.²

Dewey has offered a generalization of much of the meaning that is hidden in such statements.³ He takes the position that thought itself is developed in communication; that language and thought in their relation to signs and symbols are inconceivable save as ways of achieving concerted action; that science is science because it can be reported and repeated; that the mental, like the physical and organic, operates as an included factor within social phenomena; and that the mental is thus empirically discernible only where the forms of participation and communica-

1. *A Primer of Psychology*, 1918, p. 2. In other treatises he employed much of the substance of this expression, though without its direct form. In later years he developed a well-knit theory under which all science appears as 'description.' See *Systematic Psychology: Prolegomena*, and our later discussion of it in chapter XV.

2. One may find many in *Psychologies of 1930*. Thus Woodworth (p. 335) speaks of the mind-body problem as only a "parallelism between two different descriptions." Hunter (p. 291) speaks of scientific observation as applying only to "certain highly conventional verbal and manual responses which can leave a permanent record." M. Bentley (p. 95) speaks of "the confusion of tongues," and (p. 96) of "multiple psychologies reducible to no common denominator."

3. "Social as a Category," *Monist*, 1928, pp. 171-4. One may compare the program suggested by Mead in two articles in the *Psychological Bulletin*, 1909-10, especially the concluding paragraphs of the second article; also his paper in *Journal of Philosophy*, 1922, vol. XIX, p. 157.

tion are manifested, so that the full meanings, the full force and import of the 'mental,' are not revealed except under such consideration.

These citations from two leading investigators and thinkers of our time emphasize strongly an embodiment of science in language. One may perhaps insist upon holding Titchener's assertions closely to their immediate context. One may perhaps feel that Dewey's generalizations are too broad to furnish the close guidance that is needed in research. Nevertheless, the significance of what these two men have observed and reported remains great. The issue here is not merely one that concerns incidental uses of language in science, such as those of terminological specialization and precision; rather, we are here involved in the deepest constructional problems of knowledge itself. It is exactly the deliberate and explicit attention to this manner of linguistic embodiment which yields the 'laboratory preparation' by the aid of which our inquiry into the status of psychology as knowledge is to be carried on.

How intimate the interconnection of language and science is, and how deep the constructional problem for knowledge runs, is strikingly illustrated by the most cursory summary of the psychological situation today. Psychology has in great measure lost its reliance on the 'reality' or 'actuality' of 'mind,' in which it formerly had overweening confidence. It has transferred its attention largely to 'body.' It has not, however, except in its most unworthy moments, proclaimed 'matter as real' to be the adequate, basic, psychological substratum of inquiry. Instead, we find it toying with 'mechanistic' presentations, with 'activities,' with 'patterns,' and with 'psychological organisms.' What, however, are these but devices of contemporaneous linguistic construction for the display or hoped-for display of the 'facts' and of the 'knowledge' which the psychologies seek to discover? The values of such devices—and even of the words 'body' and 'matter' as they are today before us in technical use—do not run beyond those of a developing

coherence of language, first for the particular investigations under way, and then in linguistic connection with the sciences round about.

It is common information—first-hand report or ‘empirical fact’—that we all of us make our contacts with ‘science’ by way of its linguistic form, no matter what other distinguishable types of contact we might also list. It is similarly common information that this linguistic form has extreme importance in the control and direction of fact-finding, an importance which becomes ever more pronounced as research becomes more intricate. Indeed, the most advanced science, physics, is so completely organized in the frame of the most coherent of all languages—mathematics—that without this frame the science of physics would straightway vanish in large measure from knowledge.

Again, it is common knowledge that language, whether mathematical, otherwise technically scientific, or conventionally practical, exhibits under examination wide spatial extensions and long durational spreads: the words and meanings, that is to say, have histories and locations on the earth. We know also, in a similar rough and ready way, that these wide areas and durations are such significant phases of the linguistic situations, that we—the men of today—are wholly unable to give ‘language’ any adequate presentation for complete study if we attempt to confine it to the space, time, and environmental conditions of single living persons at single moments. The older treatment of speech as a ‘faculty’ peculiarly ‘human’ is notoriously inadequate for modern uses: its treatment by the behaviorist as a ‘movement,’ or by some other psychologist as an ‘act,’ assignable to a single organism in isolation, is comparably limited and imperfect. This situation, apart from any deeper analysis, is sufficient to justify the most careful inquiry into all science in this particular aspect of its linguistic conditioning.

Just as language, most generally considered, is spread out in space and time, so is its component specialization, the psychological language, though for this latter the extensions are narrower, the durations shorter. What is true for the language in which psychology appears is true for whatever we mean by psychology 'itself'—by psychology as a science. Such, likewise, is the case with each and every differentiation of scientific language, and with each and every science. These statements are accurate when and as we regard language and science alike as the activities, occupations, or behaviors of men. But we must permit our inspection to range widely. Neither the 'abstraction' set up for language by the professional philologist, nor a close specialization for 'behavior' in some narrowly 'mechanistic' or 'mental' form, will show language and science themselves in wide spatial and durational spreads. The 'language' which provides the framework of expression, communication, fact-finding, and connected meanings is a form of historically recorded activity or behavior; without it neither the psychologies, nor any other sciences, nor any presentation of knowledge whatever, would come before our attention.

A science of language exists, of course, just as much as does a science of psychology. Philology absorbs aid from psychology, and psychology from philology, just as any scientific inquiry may absorb aid from any other. Specialized philological constructions have their implicit or express specializations of psychological attitude in the background. Specialized psychological studies, in contrast, are most apt to regard language as one minor division of their inquiry, taking it most often as an incidental bodily phenomenon, perhaps a bit of muscular activity, in one way or another employed as a tool or developed as a "product' by mental or neural activity.

For the purposes of our present inquiry we may say that just as psychology takes a look at language to interpret it, so here we are going to permit language—a 'language' much more broadly envisioned than that of the

psychologist's specialization—to take, in its turn, a look at the psychologies, with a view to the better understanding and interpretation of these latter. The psychologies then become the subject-matters or objects for which, from the point of view of language-behaviors in general, we seek to secure some wider interpretation.

Wherever we find the existing status in the psychologies described as a “confusion of tongues” there is involved an implicit recognition of the need for such inquiry. It is common to hear it said that, until this confusion is resolved, we cannot safely hold psychology to be a science, enjoying full independent rank in the family of sciences. Comparably and accurately, we may say that the very test of the maturity of psychology as a science will be its acquirement and firm use of a flexible, instrumental medium of expression, common to all investigators as the matrix of their work.

From the point of view of the behaviorists, what is about to be undertaken may be described in a somewhat different way, even though our procedure will run far beyond the specialized techniques commonly ascribed to the behaviorists as a ‘school.’ I approach my problem, I will say, as a student of behavior.’ As such, I desire to examine the behavior of psychologists in that characteristic form which, when inspected statically as outcome or result rather than as process or activity, is called ‘the science of psychology.’ Now just as psychology, the science, is or tends to become a component of science in general, so these particular psychologist-behaviors are before us as

4. For the purposes of the present book the word ‘behavior’ sets forth a goal of inquiry, and no formal specification is given it in advance. The word will appear from time to time in its restricted application by the behaviorists. Beyond that, in the analytic studies of Part I we shall have little need for it, though we shall couple it occasionally with the word ‘language’ as a reminder that the only ‘language’ with which we are concerned is language in full behavioral envisagement.

specializations within the wider scientist-behavior. All scientist-behavior is, moreover, intricately involved in language-behavior, and this to such an extent that to pick out scientist-behavior that is not linguistically involved (except in the most arbitrary abstraction in terms of mechanistic space—in the most arbitrary scissoring of little ‘bits-of-behavior’ out of ‘behaviors-as-they-are-found’) is wholly impracticable.

As a student of behavior I demand the right to combine my observed and observable data in whatever way best seems to yield progress towards understanding. For instance, I may segregate the space of a single human body, and add to it enough of the immediately surrounding space to contain its observable movements; and I may then examine the organization of the verbal, manual, and other behaviors I can indentify in that amount of space. Again, I may widen the spaces and times of observation, and study thus in wider frameworks the interconnections of psychological-language behaviors, scientific-language behaviors, and language-behaviors in general. I observe that many behaviorists (under what I take to be a surviving influence of the old ‘mental-personal’ formulation of knowledge) choose the former of these methods, and that their results seem thus far wholly inadequate. I therefore choose to experiment with the latter method. I inspect my own behavior in this form, and so likewise all the specifications of behavior to be investigated in the course of this immediate behavior of my own.

So proceeding, we have before us various vocal utterances and pen-tracings and type-impressions, all as behaviors. We read them, however, not as isolationally definite just as they stand and in their localizations with respect to a human body, but in their wider spatial and durational presentations, much as sunlight on the earth is studied radiantly beyond the confines of the earth, and as organic characteristics are studied, by way of the genes, backwards into earlier organic manifestations of the race.

We concentrate on the particular language-behaviors of what is called the science of psychology. We find herein at times a special characteristic which is called 'coherence.' At other times we are unable to find such coherences, and mark the lack by calling the behaviors in question 'incoherent.' If in a behaviorist treatise, for example, such a word as 'stimulus' or 'conscious' or 'unconscious' or 'observable' or 'behavior' itself behaves in half a dozen different ways on as many pages, the case is set down as one of such 'incoherence.' Perhaps we may sometimes drop into the use of a commoner form of expression and speak of 'inconsistency,' but it will be this behavioral incoherence alone that we examine. We pursue such inquiries across many psychologies—in other words, across many psychologist-behaviors. As we proceed with such investigation we may expect the work itself to throw light on the question as to whether our widened frame of observation is justified, and our hypothesis of the legitimacy of such a widened frame. Even apart from this we may expect to secure much interesting information along the way.

III. SELECTION OF SPECIMENS

We are now ready to select the materials for our study. Manifestly we cannot undertake to examine every case of what is, or purports to be, a 'psychology.' Fortunately there is no need of it. We cannot even undertake to examine every case of what is, or what we may consider to be, a 'scientific psychology.' What we require is a selection of specimens, reasonably complete and fairly representative. To this end we follow the usual program of naturalists. We make a surface survey and assemble whatever seems pertinent. We then seek a first approximation to our required selection by some test as remote as possible from personal predilection, examine what we have before us, supplement or reduce it as best we may, and go to work. We cannot expect our selected materials to be wholly adequate on a first attempt, but we are confident that they justify examination, and further, that on the basis of such results as we can now secure, better selections can be made hereafter, and better investigations will follow.

The libraries provide our hunting ground. For a first approximation to a selection I have taken the essays gathered together in two volumes, *Psychologies of 1925* and *Psychologies of 1930*, published by Clark University under the editorship of Carl Murchison. These volumes present the constructions of twenty-six psychologists. I have then inspected and correlated the constructions of some fifty other psychologists, from among which I have found it desirable to select three which offer types of inquiry not adequately represented in the two collections with which we start; these are the constructions of Dashiell, Kantor, and C. K. Ogden. We have, then, a total of twenty-nine psychologies to consider.¹ Ogden's work enters, not be-

1. In a different way, and for a different purpose, I have added in chapter XV a discussion of Titchener's prolegomena to psychology.

cause of its differentiated status as a psychology, but because it illuminates brightly a type of linguistic organization common in psychological construction, but radically different from that which is here to be used.

Eighteen of these psychologies may be eliminated; for them the briefest characterization will suffice. They are either irrelevant to our inquiry, or duplicative, or else they embody prominently a certain structural characteristic which, by the later tests to be used, we shall find to be definitely outside of, or resistant to, the line of coherent scientific progress. We retain eleven systems for closer analysis, the presentations of the following writers: Madison Bentley, J. F. Dashiell, John Dewey, Knight Dunlap, W. S. Hunter, J. R. Kantor, C. K. Ogden, Margaret Floy Washburn, John B. Watson, Albert P. Weiss, and R. S. Woodworth. It is to be understood that, by the agency of these names, we bring into our study certain definite traits of construction; in no case is it the 'man,' personally viewed, or his 'system' or its merit in wide philosophical appraisal or in practical use with which we are concerned.

Among the eighteen papers omitted are eight which are too highly specialized for our purposes. The contributions of Brett and Carr are primarily of historical nature and yield no constructional differentia. That of Janet is expressly and closely devoted to a range of practical problems. Those of Flugel, Adler and Morton Prince run no wider in purpose than that of Janet, despite the pretentiousness of their verbal embroideries. Here also we must include Pavlov, since his admirable researches are held closely to a special field of inquiry, with respect to which his further theory is *obiter dictum*.² Likewise

2. The case of Pavlov illustrates in several respects the purpose and method of our enterprise. In his specific contributions to science, and in his influence on other scientific investigations, we may take it that he outranks any other man on our list. The hypothesis under which he does his work is thoroughly legitimate for that work. However, the range of his experimentation is not wide enough to justify a broad generalization of his hypothesis for all psychological purposes. It is

Spearman must be omitted as too closely specialized, although his self-restraint in presenting his results in *g*'s and *s*'s despite his background of 'mentalist' belief and interest might well serve to illustrate one of the most desirable qualities in scientific work.

Other contributions are rejected from detailed discussion here for the following reasons.'

BORING: While he has the merit of not evading, as do so many psychologists, certain situations which he calls those of 'phenomenon-response' (pp. 120-1), his professedly 'eclectic' intent (p. 116) in his development from the 'naïve' to the 'sophisticated' (p. 122) runs little beyond conventional plausibility of expression.

KELLEY: The general construction in which he proposes to study 'mental inheritance' requires as first step the determination of "psychologically independent mental traits" (p. 442). These four words are anarchic. Add that he requires "definition of the problem in terms of somatic phenomena" and "definition of mental elements and the facts of their relationship in their own terms" (p. 442), and discussion becomes unnecessary.

KÖHLER: His hypotheses, however fruitful in their own field, are differentiated within too narrow a range: as when, for the 'unreals' of sensation, he substitutes the 'reals' of configuration.

KOFFKA: Despite his acuteness of inquiry he shows, like Köhler, no advance towards the mutual organization of the two main linguistic systems that are at issue in the psychological construction problem.

KORNILOV: Setting aside as irrelevant his attempt to force research into the frame of Marxian dialectics, we find first, that he offers a highly general or 'philosophical' approach exceptionally favorable to breadth of inquiry; and

in this sense that his general theory, his attitude in psychological inquiry, lies outside our own range of investigation. His attitude is nevertheless not ignored; we shall find it at work among the systems we retain for closer study, where we can better appraise it.

3. The page references are to *Psychologies of 1930* unless otherwise stated.

second, that he introduces much valuable material, especially with respect to the operation of what is called the 'social.' However, he does not as yet come into sufficiently close contact with the issues herein discussed to justify separate treatment.

McDOUGALL: His dependence is upon a particular linguistic surface, "fact so familiar and well-established that it has become embodied in the very structure of all language" (*Psychologies of 1925*, p. 273). Here he erects as "primal urge" and as "man's nature to do" (*Psychologies of 1930*, pp. 13, 26) what is before him only in the form of 'man's present custom in talk.'

NAFE: His argument that experimental psychologists of various 'schools' may profitably compare notes, if they are not too meticulous as to what it is they mean by 'a fact,' hardly runs to the problems we have before us.

SANDER: His language-system and reality-stress are alike alien to any linguistic-scientific adjustment.

SCHNIERMANN: Terms such as 'stimulus,' 'reflex,' and 'correlation' are taken flatly, as of certain meaning, despite the extremely problematic range of their constructions; and the Bekhterev presentation gets too vast a generalization out of too closely confined elements.

TROLAND: Accepting as primary data 'experience,' 'consciousness' (p. 470), 'ends' as "particular forms of consciousness" (p. 461), and 'purposes' as conscious 'beginnings' (p. 477), he fails to analyze them with respect to wider fields of psychological research, and wholly defaults in making good his assertion that "the study of motivation" should yield "a system which is nearly as broad as the whole field of psychology" (p. 460).

The contrast between these rejected constructions and those we are to examine does not lie in the comparative importance of their contributions to the fund of particular facts which will most probably enter into the scientific knowledge of the future. Here certain of the rejected systems may easily outrank the accepted. Pavlov stands foremost; Köhler and Koffka, and also Spearman and

Kornilov, well deserve mention. The contrast is rather one between what the psychologists in the two groups take for granted and what they analyze in their more general constructions.

With respect to the rejected constructions this comment may be made.⁴ It is that they all accept as 'known' in advance of inquiry, and as the point of support for their procedures, some 'certain' or 'definitely expressed' or 'sufficiently well understood' *fact*. Their 'points of support' lie, then, in a sense, *outside* their own ranges of workmanship. No single formulation of this characteristic will do justice to all the cases. In some it is clearly expressed, or, with equal clearness, implied. In others it shows itself in

4. The only rejected construction which has given me any serious cause for hesitation is that of the Gestalt psychology, with its growing group of adherents, its frequently interesting experiments, and its suggestive penumbral argumentation. It might seem that a detailed analysis under our linguistic technique would be profitable for characteristic procedures such as those cursorily mentioned in the first footnote to chapter VI. Whatever doubt remained has now been removed by Koffka's new volume, *Principles of Gestalt Psychology*, 1935, which appears while my text is in type. Koffka commends to our attention a "behavioral environment" for which he requires a "locus." This locus, he asserts, is *not* "the external world" in which "geographical environment" and "behavior" are found (*see* his p. 32). Examining the behavior of certain hens, he declares that it "*cannot* be explained in any way without the assumption that they were *directed in their choice by a relation*," and he continues: "Since this relation certainly does not obtain in the geographical environment, it must have been *present somewhere else*, and this somewhere else is what we call the behavioral environment" (p. 33, *italics mine*). He thus retains a basic 'mental existence.' He also retains under categorical assertion the ancient scale of values of the mentalist, running to a pinnacle in the human being; thus: "Nobody would deny that of all gestalten which we know those of the human mind are the richest" (p. 22). In his final summary he finds only one single alternative possible to his 'mentalism'; it is that of a 'positivism' which would treat all events as "equally unintelligible, irrational, meaningless, purely factual" (p. 684). His own basic position, equally with the assigned alternative, lies so far outside our chosen region of inquiry, that the mere statement of its characteristics suffices for all our present needs.

the manner in which problems are formulated. In still others, it takes rather the form of constraint, of stumbling, in the shadow of some 'philosophical' cloud. This statement is not to be understood as meaning that the rejected systems are *wholly* under the influence of some conventional or dogmatic or other unappraised attitude towards factuality; nor that the accepted systems are *wholly* free from such attitudes. Far from it. It is rather that in the latter group alone we find, *so far as the material which lies before us shows*, typical and distinctive efforts at construction with respect to the problems of coherence which are to come to our attention, and for which solutions must be found before the wider scientific paths can assuredly be opened.

To omit from consideration so many well known systems is, admittedly, to limit in a corresponding degree the academic and professional interest in the discussion. However, it is not to any academic interest that appeal is here made, but rather to a closely specialized interest which we regard as 'scientific.' What may appear as a cavalier procedure, perhaps even as 'superficial,' from one point of approach, may be quite the opposite when seen from the other.

The accompanying table classifies our selected specimens of psychological construction in a way to aid in their analysis and comparison. It is preliminary and tentative, with no pretense to definitive organization. It deals with psychologies in transition, and seeks their best practicable display.

Nevertheless it is taxonomic in form. To call a classification taxonomic in the presence of a biologist would make him grin and ask: "Why the tautology?"; so far as scientific work is concerned taxonomy and classification are synonymous. Psychological systems are, however, not ordinarily treated as themselves subject-matters for direct scientific classification; rather they present themselves in 'schools,' and the differentia of the 'schools' are items of

TABULAR GUIDE TO EXAMINATION

<i>Construction Forms</i>	<i>Illustrations</i>
A. PSYCHOLOGIES WITH ASSERTIVE FACTUAL STRESS (and thus constructively dogmatic with respect to the present issues of inquiry)	<i>See accompanying text; not to be further analyzed.</i>
B. PSYCHOLOGIES WITH INQUISITIVE FACTUAL STRESS (and thus projectively 'scientific,' both as to phenomenal description and construction form)	
I. In space and time forms adopted (expressly or implicitly) from other sciences as authoritative controls.	
1. Body (organism) space-segments	
a. Mechanistic and successional (with extensions via the microscope)	<i>Dashiell</i>
b. Tentatively durational	
(a) with a 'psychic plus'	<i>Woodworth</i>
(b) with an excluded 'metaphysics'	<i>Dunlap</i>
2. Gross - Body - Movements (mechanistic and successional)	
a. With extensions via the 'implicit'	
(a) bluntly mechanistic	<i>Watson</i>
(b) with adjoined 'epiphenomena'	<i>Washburn</i>
b. Sectioned Environments	
(a) 'Common sense'	<i>Hunter</i>
(b) 'Biosocial'	<i>Weiss</i>
3. Organism-Object space-segments	<i>Kantor</i>
II. In an endeavor to override the constructional difficulties by way of a two-faced Aristotelian language (abortive)	<i>C. K. Ogden</i>
III. Along lines prognostic of a functional factuality that will include space and time as well as phenomenal description	
1. In a matrix of social experience	<i>Dewey</i>
2. In a suggestion of duplex functional language	<i>M. Bentley</i>

history and convention, of valuations, social status, or 'essential' attitude towards God, Man, or Nature—items with which we have here no concern. No wonder then that the bed-fellows of the 'schools' become separated in the present arrangement.

Taxonomy, even in a rudimentary form, such as we can here attempt, must deal with 'traits'; that is to say, with characteristics of structure, some of apparently more general importance, others of less, by means of which usable arrangements can be secured. Often the biologist's most important trait is not that which most quickly attracts the eye of the inexperienced observer. In the opinion of the average citizen, "to lay an egg" marks an enormous difference between his form of life and that of the egg-layer; the biologist, however, selects traits for his mammalia which he considers of much greater significance, and is unperturbed if the marginal mammal is oviparous. The differentia of the 'schools' are the 'eggs' which our classification disregards.

For our most significant traits we use, first, attitudes towards 'factuality,' and second, varieties of presentation and segmentation of spatial and temporal frameworks of observation and construction. As we shall use them, these traits are all to be inspected as linguistic behaviors. The full import of this assertion is not to be stated in advance, but to be developed as we proceed.

Most of our specimens fall within the tabular group B I. Within this group spatial segmentation is taken as the leading differential 'trait'; spatial type falls in a secondary place; and, beyond these, minor characteristics are employed as needed. For definitive classification one would expect space-type and time-type to hold the leading places. The other arrangement is followed, because a better survey of the specimens is obtained, just as they come before us; we employ it as tentative and as currently useful, but avoid any more emphatic claims for it. The biologist's phenomena are in evolution, but in periods of the order of hundreds of millions of years; they change little under his

hands. Our phenomena, the psychological systems, are evolving within the very same world the biologist inspects, but they are in rapid transformation, even within our own generation. For us, permanency of statement is not at the present moment a sound ideal.

Having gathered our materials, transported them to our 'laboratory,' and made a preliminary classification, we may now formulate for our guidance a few simple rules, upon which it will be well to turn an eye from time to time. They will run somewhat as follows:

Our specimens are themselves our 'facts.'

If any other 'facts' are needed, they must come into our workroom in presentations or constructions—in 'preparations,' that is to say—that are in some definite manner directly comparable to our primary subject-matters, so that whatever 'organization' we undertake is germane to our inquiry and not extraneously applied to it.

No one, so long as he stays in this workshop, is to assume that either he himself, or any one of the psychologists examined, or any other psychologist, or any other person whatsoever, has such a primary, direct, complete, or God-given knowledge of 'fact' that he can use it, by merely producing it, to settle any question whatever, small or large. Should any one take such an attitude, out he goes instantan.

Our specimens are here to be studied for themselves and with respect to one another. That is the beginning and the end of our work.

IV. DOMINANT LINGUISTIC TECHNIQUES

We have now selected representative specimens of the phenomena we are to examine; we have assembled them in tentative classification and have established definite characteristics of their observability, thus 'preparing' them for study. We are, however, not yet ready to go to work. Our instrumental equipment must be provided.

In a physical laboratory the instruments 'condition' the phenomena for experimentation; they guide the phenomena past the investigator at times and in places and in manners in which he can most profitably make his observations. Such instruments are not brought down to the phenomena from some presumptive region lying 'outside' the physical field; they themselves are physical process.

In our present enterprise, whatever differences there may be in superficial appearance, the characteristics of inquiry are similar in all essential respects. Our phenomena are in linguistic form; their conditioning, their guidance, their framing must be secured linguistically. We require, therefore, at the start of our work an examination and appraisal of the linguistic techniques which we find factually present, and which we must take into account and put to controlled use. To the brief consideration of such techniques the next three chapters will be devoted.

We have first to inspect the two great types of linguistic behavior found everywhere in the manners in which 'words' are organized with 'facts.'

We have thereafter to examine the specialized systems of linguistic tools which psychologists use in their procedures, and to compare the characteristics of these tools with those of the language of physical description.

Finally we have to appraise the frameworks of space and time which the psychologies use for the organization of their facts, and to observe in what manner these frameworks are themselves linguistic techniques.

It has already been stated that we are to regard language as human behavior—phenomenon of men-in-action—and that, if we wish to trace out its skeleton and scattered members, we require a map for our aid that runs across many men and many years. So inspected, we find two great types of this linguistic behavior. The first appears where a man affixes a certain word to a certain fact which he regards as assured—to a ‘fact’ which at least ranks to him as certain enough for his needs in so far as he has become aware of them. The second appears where man finds it necessary to erect a great construction of consistent language, and to strive desperately for its ever greater consistency, in order to have richer and wider control of ‘fact.’

These two types of linguistic behavior are rarely found in sharp severance from each other. Instead they are polarizations which we can clearly distinguish, but which, in their ordinary reaches of application, overlap. The one pole is represented by the Aristotelian canon of identity; the other, by full consistency in mathematics. The strong existential *is*, binding a ‘word’ to a ‘fact,’ appears at the former pole. The fully clarified “ $1 + 1 = 2$ ” appears at the latter pole. In the former case the ‘existence’ is assigned to the fact, and certified to by the word. In the latter case, so far as ‘existence’ enters at all, it is an existence that has its full locus *within* the consistency of the expression and its system of expansion.

Each of these poles of linguistic behavior serves to characterize a frame of linguistic construction within which ‘knowledge’ is presented, and in terms of which ‘fact’ is organized. For the purpose of aiding our immediate inspection we may name the first of these frames the Aristotelian, and the second, the Scientific. In applying the name ‘Aristotelian’ the reference must be understood to run, not to Aristotle’s own philosophical system, but instead to that linguistic-logical construction which has been dominant from mediaeval times down even into the present age, and which is everywhere labelled by his name. By the name ‘Scientific’ we bring to attention the great characteristics of modern scientific

advance under flexibly explorative mathematical control.¹

We must always recognize that, not only in the communicative behaviors of practical life, but also in a large part of scientific work, these two types of linguistic procedure run along together. Practically it is our custom to take sets of words, each word tied as definitely as possible to some purported 'fact,' and then seek maximum consistency in the use of the connected sets. Such procedure is, however, always provisional, both in its identifications of 'fact' by 'word' and in its organization of the consistencies; and it is forever in course of reconstruction in both respects. Many scientists set up their observations and reports in the Aristotelian form of statement, and to this, as a convenient custom, no exception need be taken. In simple illustration, however, it remains true that no matter how rigidly an individual scientist may declare his subject-matter to be an individual dog, the trend of biological investigation runs widely to genetic and phylogenetic inquiries which in the end transform enormously the word-meanings applied to the purported 'dog' of earlier statement.

In the preliminary classification of the psychologies in the preceding chapter it will be noted that Group A includes in a general way psychologies in which certain *facts*—together with their assured factual status—are taken as positively and adequately *known* prior to undertaking lin-

1. Mathematics is here inspected as a language, and, indeed, as the most powerful language men possess. In my further inquiries I shall throw out of consideration all purported determinations of 'fact' within the Aristotelian frame, and shall center attention on development within the Scientific frame. In my own manner of expression the words 'scientific' and 'linguistic' will thus be closely connected. Where mathematicians have attempted to establish 'foundations' for their procedures in the Aristotelian frame, and where sincerity and power have combined in the attempt, the outcome has always been the appearance of new paradox. This has been discussed in my book *Linguistic Analysis of Mathematics*, 1932, in which the opposition of the two types of linguistic behavior is employed in sharper postulatory form than is here needed. In Part II of the present book I shall examine the problems of postulation for the more general purposes of knowledge, and in Part III undertake definite exploratory work within the Scientific-Linguistic frame.

guistic and laboratory-experimental work. In Group B this heavy stress upon factuality, running often to dogmatic extremes, is lifted; nevertheless, the first nine of the psychologies in this group, forming a large majority of all the specimens examined, proceed *as if*, in the outcome, the specific identification of positive psychological facts with definite psychological names will be the type of 'knowledge' they attain. In only two of our specimens, those of sub-group B III, are we to find indications of a transformation of the base of presentation to that of a heightened linguistic consistency—even this, indeed, not in clear demonstration, but rather, in our best judgment, as the result of such analysis and appraisal of trends of construction as we are now able to make. This distribution is seen to correspond roughly with the situations of linguistic behavior which we have just described.

Physics, as the great leader in research, must always be kept in mind for whatever guidance it can give us. Physics is steadily at work making transformations from dogmatically accepted fact, through specific factual determinations, towards a generalized and much more powerful control of 'fact' in fully interrelated system; in this work its great technique is mathematics. The advance from a Ptolemaic universe through Copernican astronomy to Newtonian mechanics was of this type; the breaking down of the remaining 'absolute' in Newtonian space and the modern constructions of electron and wave carry the same line of progress still further. The breakages in physics have never been with 'fact,' but always with some ancient rigidity of specification for one or another particular fact.

We have no reason to think that psychological research can hold itself outside of a corresponding line of transformation. We have every reason indeed to regard the psychologies as today involved in early stages of such transformations. In applying tests of this kind to the psychologies, or in detecting changes of this kind among them, we are not abandoning 'fact' itself as the basis and reference of all science.

V. LINGUISTIC DIFFERENTIATIONS WITHIN PSYCHOLOGY

The psychologist works with two types of linguistic tools. One of these describes a 'physical' world; the other, as every one knows, presents the phenomena of his special field of inquiry, 'mental,' 'psychical,' 'psychological,' 'behavioral'—however it may be named. Let us, for ease of reference, call the former the 'physical language' and the latter the 'mind-language.'

In the past, and most commonly wherever the Aristotelian frame of linguistic reference has been used, it has been assumed that the 'facts' reported by these two systems of words possess radically opposed qualities which are in basic theoretical distinction from each other. From this older point of view we should doubtless have chosen the name 'matter-language' to couple with 'mind-language.' But the physical sciences have progressed greatly, and we are free to take advantage of all the new attitudes in knowledge which they offer us; their terminologies, while still strictly 'physical,' are no longer based rigidly on 'matter' in that older sense.

The psychologist today, not universally but most commonly, adopts an hypothesis of the unity of all science. However, whether he employs such an hypothesis or not, he is still unable to attain to the direct conversion of his technical terminologies from either of these systems of words to the other. His mind-language and his physical language have not yet acquired a common functional organization.

Under the newer Scientific frame of linguistic reference, which we have discussed in the last chapter in its opposition to the Aristotelian frame, such a functional organization is postulated, both as possible and as necessary. It is not, however, to be obtained by dictum. If we want it, we must work for it. The first step in working for it

will be to explore the contrasting characteristics of the mind-language and the physical language. In doing this we shall not be concerned with the origins of these two systems of expression, nor with the older manners of stressing their meanings. Quarrels over the possible 'realities' behind them will have no interest for us whatever. Our concern will be solely with the manners in which the two systems present themselves, and behave in modern scientific procedure.

Looking at the situation from the point of view of 'psychological facts,' we find it something as follows. The physical language does not attain to their description; the mind-language is still necessary as a tool; all psychological systems show consequent confusions in their development. The field of psychological 'fact' is plentiful and its investigation is of the highest importance. We drop from attention all of the dogmatic 'mentalist' and all of the dogmatic 'physicalist' attitudes towards this 'fact' and likewise all additive combinations of the two; but with this we drop nothing of 'fact' whatever. Rather we heighten the directness of our attention to it.

The issue for psychology then becomes one as to whether the new physical language will develop so as to cover the phenomena of psychology or whether the old mind-language may transform itself into an adequate medium for this purpose, with the further possibility that in the outcome the two languages may fuse into a higher consistency than either of them can attain separately.

Within the system of the mind-language we find three sectors of its application in which its characteristics are sharply differentiated from those of the physical language. To these we must add, to complete the story, a further sector in which the physical language and the mind-language overlap, and in which certain implications of the latter are transferred to what are presumably physical phenomena. The clear discrimination of these different sectors of application as between the physical language

and the mind-language will provide one of our most necessary tools of further analysis.

The Immateriality Sector. The mind-language conveys the ancient implication of 'immateriality' for all the phenomena it reports. It sets this 'immateriality' in sharp opposition to the 'materiality' of all phenomena which are presented in terms of the physical language. The problems of 'mind' and 'body' furnish the salient illustration.

Investigators often assume that when they discuss 'mind' *vs.* 'body' they have before their consideration the whole problem at issue in the mind-language; they seem to believe that if a sound working solution can be obtained for this one issue, or even a fairly plausible hypothesis, then all their difficulties will be surmounted, since all other issues are taken as reducible to this one and as capable of solution along with it.

The Apprehensionality Sector. Consider, however, the phenomena of 'perception' and of the many related psychological situations, running 'up' into 'thought' and 'down' into 'sensation.' Consider in general the problem of 'subject' and 'object' in distinction from that of 'mind' and 'body.' We have in the subject-object problem a set of implications in the mind-language which can never safely be compounded with those of the mind-body problem. In evidence, if one puts 'body' in place of 'mind' in the position of 'subject,' nevertheless all the problems concerning 'object' remain as serious and as difficult as before; and the available terms for their discussion do not change. Under either alternative one faces here, in the mind-language, a distinct set of implications, a distinct sector of application, for which there is no parallel in the direct constructions of the physical language. We may call this sector of inquiry that of 'apprehensionality.'

Take pains to read this last paragraph as it is written; do not distort it into something different under the slippery meanings of convention. I have not said that the fields of inquiry *are* different 'existentially,' nor that we are forbidden to proceed under a clear hypothesis of their reduction to one common field. The assertion is not either of these;

it is that the technical procedures actually available today in terms of the physical language do not directly deal with any such phenomena as those of 'apprehensibility,' whether these last phenomena are set forth in terms of 'mind' or of 'animal organism.' A blunt transfer of the 'subject' from a 'mind' to an 'organism' does not in any way bridge this sector of difficulty between the opposed languages. We have here a characteristic procedure of the mind-language, in which it stands apart from the physical language and opposed to it, and for which consistency of formulation must be attained, if psychology is to become a science within the family of sciences.

The Isolationality Sector. Even more striking, when one pauses long enough to attend to it, is that characteristic of the mind-language under which all the phenomena it purports to describe are set off in thorough-going isolation from everything else in the universe except the one particular 'mind' to which they belong. Our 'minds'—if we still use that term—our 'persons' or 'personalities' or 'integrations of behavior,' are assumed to have definite independent 'existence' and isolation, each in its own *locus*, apart from every other. Here is direct descent in the mind-language from the ancient 'souls,' each alone, face to face with its God. We shall find striking instances of the persistence of this 'isolationality,' as we shall call it, even where a psychologist prides himself most mightily on his reduction of 'mind' to 'body,' with 'body' in its turn a physical manifestation.¹

By this I do not mean at all to imply that any rigid dogma of absolute isolationality can actually be found in any psychology possessing so much as the first beginnings of a scientific trend. No psychologist could hold rigidly to it as he proceeded with his work. What I assert, and will later fully establish, is that the linguistic implication and construction of isolationality, deriving directly from the old mind-language, is present in very large measure in every psychology that comes before our consideration. It

1. For further analysis of this situation see chapter XIV.

is inconsistent, incoherent, and alien to the procedures of the physical sciences, but it is 'there' in the language, and it requires our most careful attention.

In the physical language no such isolationality is present in a positive form, except in the most primitive presentations or survivals of dogma.² Its modern scientific substitute is a careful, deliberate, and qualified segregation of specific phenomena in hypothesis for specific forms of examination.³ Not even the suns in a galaxy are held physically separate from one another, nor one galaxy in a universe of galaxies, in the sense that the mind-language holds mind apart from mind. The suns and the galaxies are in system, and that is a most essential part of their presentation.

2. It is interesting to note that in H. B. Lemon's book, *From Galileo to Cosmic Rays*, a work professedly prepared to cheapen the quality of modern physics for the benefit of college students who refuse to study it, recourse is had to an animistic form of expression for many physical procedures, which is not merely pre-modern but even pre-Newtonian.

3. It is in this sense of tentative segregations that H. Levy uses the word 'isolations' in his recent book *The Universe of Science*, 1932. Despite my different manner of employing the word, my general attitude of approach will be found, I believe, closely akin to his. 'Isolating,' as Levy uses the word, is a process he shows everywhere at work in society, and 'isolations,' as carefully controlled procedures of knowledge, are the mainstay of science. Such 'isolations' are, however, in sharp contrast with the primitive and unanalyzed attributions of 'isolationality' which I have had in mind. Once this primitive 'isolationality' has been destroyed in the psychological field, it may well be that Levy's use of the word 'isolations' for controlled scientific techniques may establish itself with permanent value. It is far better than the language of 'abstractions' and 'exclusions' which he rejects, and likewise than expression in terms of 'concepts.' Had I been aware of Levy's development prior to the completion of my manuscript, I should doubtless have used a different word for my different purpose. By way of further comment on the present use of the word 'isolationality,' it is evident that it might apply in a broader rendering to situations of apprehension as well, since the 'individual' man under the mind-language is regarded as set over in isolation from 'objects' as well as from 'other men.' The present use must therefore be taken as highly

The word 'social,' bastard of mind and matter, is of course found everywhere at work in the psychologies, but nowhere does it yet show coherent meaning; nowhere do we find consistent determinations of what is 'individual' in terms of what is 'social,' and *vice versa*. It is exactly because of these ever-present confusions that we must keep a keen eye on the isolationality sector of the mind-language.

The Environmental Sector. The problems that arise from study of the interactions of the organism with its environment enter importantly into all psychological inquiry. They are not to be confused with the problems of the apprehensional sector, although they furnish a surrounding background of knowledge within which the apprehensional problems of organism (or 'mind') and 'object' must be studied. The presentations of 'environment' condition those of 'object' but do not replace them. We have here primarily a biological specification within the ranges of the physical language, but commonly we find a confusion of overlappings with the mind-language. Vitalisms exhibit strikingly the infiltration; the generalized treatments of adaptation to environment illustrate it, and so also do many naïve uses of the word 'organism' and many applications of the presentation 'organism-as-a-whole.'

This differentiation of sectors of application and implication for the mind-language provides tools for our further analysis, and is made for that purpose only. By the use of these tools we can from time to time detect characteristics of particular psychological systems which might otherwise evade us. These sectors are regions of difficult problem upon which psychological research is ever touching, and to which it will, in the end, be compelled to do justice in fully systematic presentation. We may speak of

specialized; I regret the clumsiness of the word, but find no better substitute among the various possibilities considered, such as terms deriving from separation, insulation, or disjunction.

these regions either by the names used above, or, more casually, as problems of organism-environment, of mind-body, of organism-object (or mind-object), and of man-man.

Manifestly this classification of the four sectors is not of a 'logical' type. It is a report, a surface description, of difficulties as we find them. The immateriality problems are far advanced to practical solution; the apprehensionality problems are at the present moment passing through a stage of neglect by specialists who take entirely too much for granted with respect to them; the isolationality problems are hardly raised as problems at all, although stubborn isolations are everywhere accepted and used as a basis of inquiry; the environmental problems receive much partial and inadequate discussion.

Concerning the mind-body problems I repeat with emphasis the previous statement that the attainment of a practicable working basis here does not justify the assumption that thereby all the difficulties of the oppositions of mind-language and physical language are surmounted. The assumption is crude; how crude it is will quickly appear when we proceed to the analysis of pertinent types of psychological construction. The issues of the other sectors are equally difficult, and remain to be overcome.

VI. PSYCHOLOGICAL SPACES AND TIMES AS LINGUISTIC TECHNIQUES

In the tabulation of the psychologies in chapter III the 'traits' that were used for their classification were, in the main, the various manners of spatial and temporal presentation and segmentation which the respective psychologists employed for their descriptions of psychological phenomena.

Since we are treating the psychologies themselves as natural phenomena spread out before our eyes, and since we are deliberately taking them in linguistic 'preparations' in order to hold them in closer observation, we have no concern with any 'realities' of either space or time, nor with any *ex cathedra* attitudes which psychologists assume towards either of them. We have to do solely with psychologist-behaviors in the linguistic form. The classificatory 'traits' are the manners in which the psychologists proceed in the midst of their work; knowledge of these traits is to be gained only by close examination of that work, not merely in its main expressions, but in the coherence of its development.

The spaces and times of the psychologies are thus at once scientific procedures and linguistic techniques. In dealing with them thus, we are treating the psychologies in the very way in which we should treat any one of the more advanced sciences if we were concerned with its examination. Thus if our subject-matter were physics, we should observe that the physicists worked with various spatial and temporal possibilities, all of which were furnished them by mathematics in definitely linguistic form.

In an earlier generation, time was accepted by psychologists as a necessary frame for their professional observations, but not space. Starting with a substantive 'mind,' the theorist therefore found himself deeply involved in inquiries, which he shared with his philosopher friends, as to how such a 'fact' or 'effect' as that of a spatially ex-

tended world could be recognized, constructed, attained, or obtained by man.' With advance towards the elimination of the mind-body problem in the light of the newer psychological knowledge, such issues have lost most of their critical stress.

Today great variety appears among the psychologists in their working constructions of space. Some psychologists accept casually the conventional space, and are satisfied to view their psychological phenomena as possessing a certain 'quasi-localization' with respect to it. Others formally adopt and proclaim a particular space-type as the background of psychological inquiry, and proceed to give the psychological phenomena definite location within it, and to demand the restriction of all inquiry to descriptions of fact that can be given such location. Again we come across constructions which obscurely employ variants of the standard spatial presentations, but without clear analysis of the steps that are taken. The first type of procedure is still the most common; the second is illustrated by those mechanists who prescribe that observation must be limited to movements in a Newtonian background; the third type appears in many instances in which the main reliance is placed upon 'activity' as a description of psychological phenomena.

Situations such as these are manifestly unstable. Variety of approach is, of course, always desirable, but the sooner it passes the stage of vague gropings and crude ultimata, the better. A determined effort at clarification is required; and we shall find in the end a few systems in which progress is already under way towards the establishment of

1. This typical quandary has been succeeded by various close specializations of laboratory research, items of detail in knowledge rather than of decisive issues. A bizarre collateral development is the point-to-point matching of brain-spaces to outer-world spaces. Thus we have the hypothesis of Köhler (*Gestalt Psychology*, pp. 61-67), the interesting researches of Koffka into dimensionality (*Psychologies of 1930*, pp. 172-85), and the recent formulation by Boring in his vice-presidential address (*Science*, Jan. 8, 1932, p. 32). The oddity here lies in retaining 'mental-ness' in phenomena, and then investigating them under a radically physical technique.

definite psychological space-forms, and towards their comprehensive organization with the spaces of physical and biological investigation. If psychology is ever to establish itself firmly as a science, it must acquire a frame of observation, description, and interpretation which can be employed in common by the great body of investigators. Such a frame must have its adequate spatial specification—omit this and all else wavers; conversely, its spatial specification will be neither more nor less than the characteristic outline of the most efficient manner of psychological observation. In this, as has been the case with other sciences, psychology will pass beyond the authoritative control of the conventionalities of non-scientific language, and will permit a competent scientific language to develop as the facts of its discovery require.

The construction of the temporal form in psychology is intricately involved with that of the spatial form. What here concerns psychology is the coherence of its presentations of psychological phenomena as 'in time.' This is again an issue of adequate linguistic embodiment.

If we take a mechanistic space in any one of the forms employed by the five psychologists listed in our table in groups I 1 a, I 2 a, and I 2 b, and establish its status clearly as a linguistic-scientific device for organizing factual report and interpretation, we shall note that time appears in connection with it in the form of momentary successions.

Contrast with this the spatial-temporal construction of any one of the psychologists who stresses heavily the 'activity' of the 'psychological individual' as his direct phenomenon of observation. The time-form here is durational, rather than successional, and along with this change the space-form also undergoes change. The psychologist may accept or reject a mechanistic space as the background of his inquiry, and he may do this expressly or tacitly; nevertheless a wide gap has opened between him and the mechanists, whether he himself recognizes it or not. He is found 'clotting' his 'activities' into complexes of one type or another, and the possibility of such 'clotting' has often been the determining factor in his choice of a manner of

presentation. He then has phenomena which do not belong in a mechanistic space at all; which are incoherent with his mechanistic background, if that is what he assumes; and which require much further analysis to give them proper spatial standing of their own. The 'organism-as-a-whole' is a presentation of similar type, one upon which the mechanists themselves often lean heavily. Nevertheless, as we shall later see, any such presentation involves, or forecasts, the abandonment of the mechanistic frame itself.

These are but samples of construction. The test for them, and for all other frames of construction as well, is how successfully they can be applied without abandoning the essentials of the construction itself. To set up one of these frames, or to start out in its terms and then, where it ceases to be satisfactory, to bring in materials from some other frame by a clever adaptation of vocabulary, is not praiseworthy procedure. Instances of this kind, however, are easy to find.

Given a general type of space-construction that is similar, or, as one often says, 'the same' for several psychological systems, further differences may appear with respect to the particular segments of that space which are placed at the center of observation. Here is primarily a selection or stress of attention upon the part of the investigator; however, it very quickly transforms itself into a substantive declaration as to the 'fact' of psychological observation. Thus, in a Newtonian space one observer may select 'brain'; another may choose 'whole organism' defined as within the limits of the skin; another may say 'whole organism' but mean by it gross-body-movements, thereby employing a space-segmentation considerably larger than that within the skin itself; while still another may spread this latter pattern over 'everything pertinent' and discuss his phenomena in an organization, and with a stress of description, which he may—or may not—label 'social.'

Our procedure with respect to the eleven psychologies selected for more detailed examination will therefore be

as follows: Concentrating upon linguistic coherence or incoherence as our direct fact of observation, we must give attention to the types of space and time each of the psychologists uses. We must then identify the special space-segment with which he is primarily concerned. We must finally investigate his procedure with respect to the characteristics of immateriality, apprehensionality, and isolationality which he allots to his phenomena, whether these appear as phases of the mind-language so far as he retains it, or as survivals from it if he conceives himself to be rejecting it entirely.

The discussion of some of these systems of psychology will run to much wearisome detail, even though it would have been easy in many cases to summarize the conclusions and dismiss the constructions cavalierly because of alleged incoherencies. I have deliberately allowed all this detail to remain in the text, because I want the case to be plain in the linguistic forms of psychological inquiry itself. It is not here a question of alternative opinions—one against another, mine against that of each system criticised—but of the record as it stands in the words of each psychologist for himself. The reader can easily pass this material by, so far as he is satisfied without it.

Psychological terms which will be most prominently before our attention are such as 'stimulus,' 'object,' 'environment,' and 'activity.' Certain other terms or phrases which are frequently used for the characterization of systems will receive no more than passing notice. Such a term is 'objective,' a word which too many psychologists of too many minds claim in too many ways emphatically for their own. The phrase 'whole organism' has almost equally many claimants, although its value rarely rises over a ratio of one part of explicit intention to nine parts of obfuscation. Even an occasional exercise of minor ingenuity directed towards the replacement of such terms would be refreshing.

2. It is of interest to note that the word 'object' is not indexed at all in *Psychologies of 1930*, and that the word 'stimulus' is indexed significantly only for Dewey, and incidentally for Hunter and Dunlap.

VII. PRELIMINARY EXHIBITS: DASHIELL, HUNTER, C. K. OGDEN

Having thus outlined our procedure, we may now profitably make a preliminary inspection of certain outstanding characteristics of construction, choosing psychologies in which these dominating traits are so bluntly presented that they may be thrown upon the screen without too intricate a diagram.

Dashiell places psychological happenings within the human skin. Hunter makes them 'environments' within 'environments'—that is to say, he assimilates them in a specialized form to 'everything that happens.' C. K. Ogden attempts to resolve the special linguistic difficulty of psychology by introducing a specialized duplicity into the ancient Aristotelian language-logic system.

DASHIELL accepts physiology, neurology, and endocrinology, not merely as furnishing useful and essential aids to inquiry, but as providing the locus of psychological phenomena and the basis for their investigation. His book *Fundamentals of Objective Psychology* applies and develops the word 'objective' in this sense, however far afield some of his applications of the term may run.¹ He dramatizes the problems of the mind-body sector of the opposed languages so vividly that the problems of the organism-object

1. In his preface Dashiell stresses the importance of (1) "physiological or intra-organic objectivism," (2) "behavioristic or extra-organic objectivism," and (3) "a skepticism as to the adequacy of introspection." He then declares that "*from this viewpoint*" he can attain to "*a consistent objectivism*" (italics mine). Our attention will here be directed to the characteristics of the consistency he secures. His extension of 'body-space' through the use of such terms as 'incipient,' 'nascent,' 'implicit,' 'tentative,' 'potential,' and 'tendency' (*op. cit.*, pp. 38, 391, 448-51, 480-1, 485, 540) will be passed over for the present, as that method of procedure will come up for attention in chapter IX.

and man-man sectors become 'objective' for him only as they are reducible to terms of the 'body.' I shall first cite passages in which this characteristic is prominent, then examine other passages radically inconsistent, and finally, show the manner in which he assumes that he secures organized discussion.

"Psychology is to be considered as one of the biological sciences" (p. 13).² Psychology studies the "roles that these organs and tissues (John Smith's brain and glands) play in determining why John Smith browbeats his subordinates, votes for the League of Nations, and prefers his salad served with his dinner course" (p. 14). "Human psychology is rooted in living protoplasm" (p. 22). Animal behavior must be considered "as intra-organic processes not adequately furthered by environmental circumstances" (p. 27). Since the person's 'psychology' is a matter of adaptations mediated by the bodily structures of which the sensori-motor arcs are composed, "consequently . . . the person's psychology depends upon the precise natures of these structures" (p. 49). "The primary sources of human and of sub-human behavior are to be found in the metabolic processes occurring within the body" (p. 117). "It has been shown that human behavior turns out to be a story of sensori-motor arcs" (p. 154). "We have traced the original sources of the motivation and energizing of human behavior back to tissue conditions of the organism" (p. 248). "It is common to speak of the organism as a machine. It would be more precise to call the organism an engine" (p. 273). "The thinking acts themselves are the functions of striped muscles" (p. 547).

Of course, such assertions stand forth in Dashiell's development rather with the value of ideals than of present achievements; but the ideals are regarded as assuredly attainable, and, what is still more significant, their attainment is regarded as precisely the program of science.

2. Page citations in the text are from his *Fundamentals of Objective Psychology*, 1928.

'Environment' and 'adaptation' and 'appropriateness,' however, are situations prominent in the contexts of all these assertions, whether or not they are definitely specified in any particular instance. If they can be detached from the presentation of that which is taken basically as behavior—if they can be regarded as conditions 'external' to behavior in such sense that behaviors can get their own definitions and specifications apart from them—then Dashiell can perhaps establish his basic position as valid; otherwise he can not. Now 'environment' and 'adaptation' enter psychological construction in the special forms which psychologists discuss in terms of stimulus, reaction, and object, and in terms of social influences and responses. If Dashiell can make good his localization of 'behavior' in the animal body, then he must be able to deal definitely with it *within* such localization, in clear distinction from whatever else he takes into account as important for consideration outside of it. Observe, however, what he finds himself compelled to say about psychology and the psychological in his more general orientations.

Psychology as a biological science is "distinguished by the emphasis which it places on man in his interaction with environmental conditions," in its study of "give-and-take relationships" for the "more or less integrated whole" (p. 13). The "environment" is made up of "objects," including "people around" and "non-living things" which are "the products of human society" (p. 14). The "two connected processes of stimulation and response form the specific interest of psychology," and reaction must be "appropriate" to stimulus (p. 35). "A stimulation and its consequent response may form, together, a complete event": "it cannot be divided and still continue a complete natural event": "stimulation-and-response, then, form the irreducible unit or segment of human or animal behavior": this is "a unit of activity taken in a psychological sense," and "unit is something that admits of no further division" (pp. 35-6). Here is a set of sentences corresponding closely to the position which Kantor had taken at an earlier date when he estab-

lished his "segment of behavior"³ in the very phraseology which Dashiell takes over. But whereas Kantor had proceeded to definite observation and construction in this form, Dashiell no sooner utters than he forgets. 'Environment' and 'adaptation' and 'appropriateness' all are interpreted in terms of the flesh of the body; 'stimulus' and 'response' consolidate there into a 'unit'; the scientifically problematic status of 'perceiving' with respect to objects and of inter-influencing with respect to other beings is disregarded; and the 'unit' he uses comes to correspond precisely to the old mental presentation of the 'mind-language,' except for the one detail that he constructs it out of flesh and blood instead of out of spirit, soul, or mind. The Dashiell psychological presentation, therefore, in ceasing to be 'mentalist' becomes something that we may perhaps label 'mentaloid'; this is the full extent of his progress.

If one now attempts to identify a definite meaning in Dashiell's work for the word 'stimulus,' he will find it wholly impossible. Sometimes this word implies 'object,' sometimes a separate phase or part of 'object,' sometimes a physical phenomenon such as light-ray, air-wave, or thrown-rock, making contact with the skin from the outside, and sometimes the receptor end of the sensori-motor arc. Single illustrations of this confusion may be selected from the hundreds available; a diagram on page 37 exhibits both stimulus and reaction as 'physical,' and as 'beyond' the skin of the organism; a passage on page 424 describes 'perceiving' as an adjustment "not simply to the stimuli immediately, but also to larger wholes, to objects or situations of which the actual stimuli are only part or sign"; another passage, page 387, seems to go expressly 'mentalist' in saying that "stimuli act upon the human being, then, not only in their capacity as physical energies physically measurable, but also as inciters to activity in ways not to be fathomed by any amount of painstaking analysis of the stimuli." 'Perception'—and the

3. *Principles of Psychology*, 1924, vol. I.

same is true for 'thought'—becomes for Dashiell a sort of distillate or secretion of brain, muscles, or body in general. Terms of the physical language are used to apply both within the body and without, but the physical construction is not developed across the situations that have to be studied. The 'body' is now made to *do* that which 'mind' once did, or to *be* that which 'mind' once was.

It is plain enough in the citations above that Dashiell does not ignore the complex situations which make up behavior and psychological activity. It is exactly these which he must study. What he does is to treat phenomena of the highest and most immediate psychological significance as 'conditions,' as 'external' facts set over against 'behavior' proper, which latter he locates 'inside' the body or as purtenance thereof. This is true with regard to 'apprehensional' problems, and to 'isolational' problems as well. An examination of his pages on social behavior (pp. 426-55) will show that after giving a very wide recognition to social influences, he categorically reduces them all to conditions or stimuli outside of the behavior itself. It is especially in this 'isolationality' that he most emphatically carries on the mentalist tradition. The following passage (p. 178) is significant of the result: "Conditioning may be the fundamental phenomenon to which all education and training ultimately reduce. It may be the one principle necessary to explain all human acquisitions." This passage has two sentences, two assertions. Although they are put forth as if they were but complementary expressions of a single affirmation, they differ radically in import. Dashiell's development fully justifies him in the assertion that the first point 'may be' correct; it is adequately coherent with his own frame of construction. His second assertion, one upon which he enlarges with great enthusiasm in various later passages of his book, has a wholly different range, and is not justified by anything whatever in his development or construction. It stretches far across the borders of his inquiry, and its linguistic and scientific difficulties are not so much evaded as

ignored.⁴ It is an isolationist carry-over from that old mind-language which, in his concentration upon a single sector of its problems, he imagines himself rid of entirely. Some of the difficulties which Dashiell's proposition must face, if he attempts to maintain it, will appear in our examination of the constructions of other psychologists in the coming chapters.

HUNTER'S construction is introduced here solely for the purpose of exhibiting something of the present psychological status of that sector of linguistic confusion which we have called apprehensionality. What we are about to say would be grossly unfair if read as a valuation of him as a man or as a psychologist. He accomplishes good work under a bad construction. Taking for granted that the good work is known to everyone, we shall concentrate our attention upon the direct 'fact'; namely, his construction as we find it set down for our use.

His 'anthroponomy' opposes itself sharply by name to all 'psychologies,' and makes a crusade for the expulsion of *all* terms of the mind-language from the terminology of research. In this sense, but unfortunately in this sense

4. A closely similar situation in Madison Bentley's psychology will be shown in chapter XI, where the outcomes are attributed to P-functions instead of to physiological processes. The psychologist may be interested to compare a corresponding procedure among the geneticists who drop to the germplasm and make that responsible for all the world's work. Walter's introductory text-book, *Genetics*, displays sharply the linguistic distortion. He offers (1st ed., p. 2) a "triangle of life" with heritage, environment, and training as representatives of "what we are," "what we have," and "what we do." He asserts the interaction of all three (much as Dashiell does), and is even willing to define an "hereditary character" as "a method of reaction of the organism to the constellation of external environmental factors" (p. 5); but he nevertheless asserts that heritage is what the individual "actually is," and that the triangle of life rests "solidly upon the side marked 'heritage' as its foundation." Walter's statements, like Dashiell's, are adequate enough for his immediate practical purpose. Expand in either case, however, the full set of expressions, and conflicts at once arise disruptive of the particular assertions emphasized as basic.

alone, his interest is highly linguistic; it extends to proclamations of banishment, but not to analysis of consistencies. He makes his construction in a frame of visual space, with respect to which other sense reports can be organized. This is a wholly legitimate procedure, and against it no criticism is here directed. Indeed, under proper hypothesis and control, and with modern science as we have it today, I shall be inclined to regard it as the only possible procedure if psychology is to be part of science.⁵ What we have to consider is something different. It is the type of visual space he uses, and the manner in which he sections the world of visual space presentations into elements he calls 'environments.'

For anthroponomy, 'environment' is simply its private name for 'nature,' or for 'everything,' or for 'experiencing and the experienced.' Environments are divided into two great classes, the inner and the outer; the former is roughly the same as 'a man,' and the latter, the equivalent of 'everything else.' In adopting the term 'environments' and in assailing the 'psychologists' for calling environments 'mental,' Hunter orients his discussion to certain domestic disputes of psychology with which we here have nothing to do. Allowing him a certain offset to criticism because of these surviving odors of the psychological nest in which the anthroponomical bird is hatched, we have nevertheless to examine as definitely as possible his own construction. We note particularly that what he offers is a 'common-sense environment.' "The anthroponomist does not deny the existence of the common-sense environment" (p. 285). "The behaviorist, like the physicist, accepts a common-sense view of the environment as the milieu for his experimentation" (p. 296).

The first question we are led to ask is: What, definitely, is it that this environment environs? We shall not be arbitrarily 'logical' in asking such a question, but shall merely seek enough of a 'what' to help us along with our under-

5. For development *see* chapters XX and XXI.

6. *Psychologies of 1930*, p. 283. All citations by page number in the text are to his essay in this volume.

standing. It is thoroughly intelligible that 'anything' may have 'everything else' for its environment. When we consider that case, however, the word 'environment' cancels as non-informative. We require in place of it a competent construction in hypothesis for this universal situation of thing-to-thing. Such a construction Hunter neither offers nor suggests.

The difficulty increases when we consider the status of 'inner environment' with respect to 'outer environment,' and vice versa. Here we find three apparent possibilities of treatment: (1) The observable boundary between the two may be taken as the 'human skin,' most realistically established as *the* critical distinction of the universe. Since the physical and physiological skin defaults for such use, there would be necessary, in replacement, a psychological 'skin' of very careful mathematical construction, with differentiations as subtle, no doubt, as those of *Grenze* and *Rand* in the point-set theory. Hunter gives us no development on such lines. (2) The inner and outer environments may simply be terms that serve to replace the old terms 'inner' and 'outer' as used by the mind-language; then, however, the result is *nil* so far as factual research is concerned. (3) The 'common-sense' which Hunter introduces may be the implied 'subject' for all environments, taken as objective; here there are many possibilities, and some development should certainly be offered us in terms of particular, general, average, and other troublesome characterizations.

Hunter offers, it is true, his own "hypothesis concerning the nature of environmental objects" (pp. 287-8), or, in what we may take to be his more 'exact' specification, concerning "the nature of the inner and outer environments *as these are reported by his subjects*" (p. 297; italics mine). The hypothesis is that they "are all cases of a particular stimulus-response relationship," each a "bit of behavior" described as "the irreversible SP-LR relationship," the symbols standing for 'sensory-process' and 'language-response' (p. 287). This 'hypothesis' or phrase is anthropomese for all cases in which 'psychologists' would write

the word 'consciousness.' We may paraphrase this by saying that, for Hunter, the talking-behavior of the inner environment 'is' the outer environment; likewise it is the inner environment.

That sounds absurd. However, it is very far from being absurd, if we may judge by the many different routes along which psychologists of different schools are approaching a somewhat similar expression. It participates in that very trend of observation and inquiry which we are following in this book when we make our study of science in terms of its linguistic organization. What is absurd in its appearance is, I am inclined to think, only the particular space-form and space-segmentation which Hunter uses in setting up his presentation. He pictures 'everything' as in the form of movements in a visual space. He then sections this movement-space into movement-things, which he groups into two great classes, 'inners' and 'outers,' corresponding to the very linguistic oppositions which he has so vociferously banished forever from his realm of study. He finds a special class of 'talk-things' bobbing up to replace the older 'consciousness.' Thus the more anthroponomy stresses its change, the more, we may almost think, it is *la même chose*.

Returning to our general inquiry as to what it is that Hunter's environments are environments to, the only answer we can find from his developments is that they are environments to 'common-sense,' that this 'common-sense' is 'man-talking,' and that 'man-talking' is the old 'individual consciousness' of the old mind-language. The 'immateriality' is deleted from that mind-language; the 'apprehensionality' is evaded by making 'everything' appear before us in apprehended form and in that only, while the 'isolationality' of the old language reigns triumphant in its criteria for sectioning environments into 'things.' The new form is discretely mechanistic, but in it all of the old problems must

7. By referring to Hunter's paper in the *Psychological Review*, vol. 31, p. 11, we learn that "being irreversible" means that "where LR-SP or R occurs we do not have a phenomenon termed 'consciousness.'" Evidently the 'irreversibility' has no high significance in the hypothesis.

be attacked over again, and so far as Hunter's own construction is concerned, the attack is not yet begun.

In a paper later than the one discussed above,⁸ Hunter makes a much more determined attempt to find adequate characterization for that behavior which is 'psychological.' It is to be "the extrinsic behavior of the organism to an external environment which is predominantly social." However, his distinctions of 'subcutaneous' and 'supercutaneous,' of 'intraorganic' and 'superficial,' and of 'extrinsic' and 'intrinsic,' and the survivance of his 'inner' and 'outer' environments have not sufficient definiteness of construction to require any change in the preceding comments.

OGDEN'S construction, as has already been said, is examined here solely because of his attempt to secure a solution of the psychological language dilemma through the application of his previously developed theory of language and meanings. That theory arose on the old Aristotelian base and is therefore in polar opposition to the linguistic construction used as hypothesis for the present inquiry. We have to appraise his results.

For the theory of meaning we may refer to his well-known triangle.⁹ In this he assumes as self-evident a basic one-to-one correspondence between 'words' and 'objects.' The apices of the triangle represent 'symbol,' 'thought,' and 'referent'—or more familiarly, 'words,' 'thinking minds,'

8. *Psychological Review*, Jan., 1932.

9. Ogden and Richards, *The Meaning of Meaning*, p. 14. Too cursory an examination may lead one to believe that the dotted line between 'symbol' and 'referent,' as opposed to the solid lines for the other sides of the triangle, abandons the dominant Aristotelian position. However, the dotting of the line is merely to eliminate word-object naturalisms and magics and to emphasize the mediation through 'thought.' The strict referential connection is required by Ogden for "all reflective, intellectual use of language" (p. 13). The first canon of his symbolism is stated thus: "One symbol stands for one and only one Referent" (p. 187). From our present point of view his whole diagram merely yields a preliminary display of situations not as yet thoroughly analyzed.

and 'things.' The sides of the triangle are designed for rigorous display of the relationships that exist between the three accepted apices.

Such a theory manifestly involves its own special form of psychology, adopted in advance of the construction of the theory. Nevertheless, after constructing the theory, Ogden turns it back upon psychology in general to provide that science with a linguistic organization. This he does in *The Meaning of Psychology*; he begins by listing and rejecting one after another all the many attempts that have been made to correlate the 'mental' with the 'physical' *qua* 'fact'; and then proposes to substitute for all of them his "double-language hypothesis." It is, of course, an empirical datum that this doubleness of language is before us; but to establish its very 'doubleness' in formal hypothesis as the adequate and permanent matrix for all research and for all the solutions that go to make up knowledge, is quite a different affair. Such an hypothesis stands or falls on the way it works; Ogden's particular pitfall is that he has nothing prominently before his attention with respect to the language oppositions except the mind-body sector of their application. We have merely to characterize the outcome.

A very plausible slide-rule is provided, by means of which one can find his way around nicely within the middle ranges of investigation. Such are the ranges corresponding roughly to the commoner behaviors of ordinary animal and human living. But start to use this slide-rule upon the more intricate problems and you quickly reach regions in which only a single arm of it will apply. Where 'objects' are discrete and specific, it is the physical arm alone that pushes out to the work. Where 'thought' performs its most subtle work, it is the 'mental' arm that alone pushes out, and the same is true in all of the regions where the independent mind-language is most strongly entrenched. We even find Ogden arriving at the remark that "the verbal formulation . . . is always at best an imperfect representation of . . . the thought itself."¹⁰

10. *The Meaning of Psychology*, p. 233.

In the middle ranges of his slide-rule procedure Ogden depends comfortably upon the word 'activity,' the same word upon which so many psychological constructions now rest for support, and to which we shall give more direct attention in chapter X. He has, however, an ever-recurrent and wholly unclarified distinction of 'process' and 'product' running through his treatment," and where he uses 'activity' for the events of 'thought' we find the old splits between 'actor' and 'action' appearing in their old established forms. In the end he presents himself as solidly entrenched in the 'mentalistic' position.

To refer back to the triangle of meaning, Ogden shows us the physical language in control of psychology at one apex, and the mind-language at another; at the third apex, language permits itself a specialized duplicity for the specialized psychological problem. As respects the Aristotelian linguistic frame which he uses, the special contribution of his "double-language hypothesis" is merely its degradation from its dominant 'one-to-one' correspondence into a 'two-to-one' for the special case of the 'mental-physical' needs of psychology. That very 'verbal magic' which he has so often and so valiantly overpowered finds here a way to resurrect itself to his hurt.

11. *Ibid.*, pp. 183f. and 190f.

VIII. APPROACH TO APPRAISAL

In order to improve our position for the study of the constructions that are next to come before us, it may be well to pause long enough to appraise the exhibits we have just had.

Not being far enough advanced to draw 'conclusions,' we must content ourselves with tentative inferences. If, for convenience, we state these in positive form, it is only under the following provisos: (1) that we have had before us fair samples of construction, and as good workmanship along each line as we may reasonably require; (2) that the aspects singled out for attention are characteristic psychological procedures, and significant for all psychological construction; and (3) that the criticisms that have been made are not verbal trivialities, but run to the heart of the questions involved.

Under such assumptions, then, we learn from Dashiell that arbitrary segregation of one portion of the field of inquiry will not make a 'psychology'; from Hunter, that environments are not crass presentations behind which science dare not peep, but constructions at the very core of analysis; and from both Hunter and Ogden that mere juggling with the words of language will not suffice to make a science, but that continuous, thorough, and ever-renewed analysis of the full linguistic-factual situations before us is necessary for progress.

In Dashiell, attention was so strongly concentrated upon the single human organism within its spatial limits as organism, that the whole problem of apprehensionality, from perception upwards and downwards, was smeared and blotted out. Not only problems of organism-object, but problems of man-man, were taken by him as if adequately determinable within the space of the single organism, where no direct attack upon them can be made. In Hunter, the

forcing of a rigid spatial and temporal frame upon his materials yielded perhaps a little temporary verbal and sentimental satisfaction, but merely led to the recurrence of all the old problems in substantially their old forms. In Ogden it was not only his own special construction that broke down, but the entire Aristotelian linguistic system upon which he rested.

It is evident, then, that the exploration of the psychological situation must be carried much further than these exhibits have taken us. In the chapters that follow I shall examine, first, constructions in movement-space of the type which Hunter employed for his generalization of environments; next, constructions in action-space, where 'activities' with a primarily physical definition are clotted into 'personal' forms that transcend the physical description; then, similar 'activity' constructions which are beginning to show signs of progress towards a fuller linguistic determination for both the physical and the psychological aspects of the inquiry in a joint development of scientific technique; and finally, the sole construction I have found in which, with the full abandonment of the old immateriality values of the mind-language, construction is attempted under a direct consideration of its apprehensionality values. Throughout the examination, we shall face from time to time issues in the sector of 'isolationality' of the old mind-language; and we shall find an accumulation of materials bearing upon their treatment, but nowhere any direct effort to secure their organization under any spatial frame at all adequate for their presentation.

IX. MOVEMENT-SPACES: WATSON, WASHBURN, WEISS

The psychological constructions to be examined in this chapter are of a type most commonly characterized as mechanistic by proponents and commentators alike. This word 'mechanistic' rates as a slightly pompous substitute for 'mechanical.' What it purports to tell us is that, primarily, all observation is to be directed upon distinguishable movements, much as mechanics makes its primary observation. These terms carry such numerous and varied conventional and philosophical implications, however, that it is best to drop them from our more specific use. Our interest lies solely in the technical characteristics of the constructions, and in the possibilities for their further development. Instead, therefore, of using the terms 'mechanistic' and 'mechanical,' I shall more commonly say that the construction-form of these psychologies is that of a movement-space. We confine our attention to what happens in a psychology when such a movement-space is employed as the background and frame of its presentation.

To characterize and name that which they regard as 'the psychological,' exactly speaking, the advocates of the movement-space have appropriated the word 'behavior' and have attempted to give this word definitive status. However, psychological phenomena have steadily resisted all efforts to confine them closely within this form. Behaviorists, in consequence, have been unable to form a closed 'school,' and the word 'behavior' acquires among them so many varieties of implication that it loses all terminological precision. Nevertheless we may say that the central intention and procedure in their use of this word 'is' precisely what is here meant by a movement-space. The two situations are not to be separated. The practice of the behaviorists in taking the psychological phenomena in mechanistic-behavior-

ist terms, and in proceeding thence to the construction of a psychology, 'is' itself the very movement-space that we are now to examine.

In such a movement-space, both in observation and in scientific interpretation, the specific observable movements are taken as if capable of definite severance, each from the others around, and from those before and after. Characteristic of a movement-space is the use of 'successions' as the temporal form of the phenomenon. While the behaviors may be spoken of casually as 'events,' they are not events in that distinctive meaning of the term which has established itself since physical relativity succeeded in exhibiting time as a component dimension of 'what happens.' The 'durations' that appear in a movement-space are, therefore, incidental or external considerations, historical or biographical, rather than necessary components of the primary observation.

The psychologist who uses a movement-space for his construction assumes that type of space as extending infinitely across both universe and atom. Within this wide frame he specializes his attention upon certain of its 'segments' which he takes as containing and presenting to him the particular observable movements he proposes to study. He accepts this spatial frame as he finds it delivered to him by the 'natural' sciences; he believes that in applying it to his phenomena, and in inspecting his phenomena as adequately framed by it, he is in all essential respects conforming to the pattern of those other sciences; he takes over from the older forms of psychology the materials of their presentation, and believes—or hopes, as the case may be—that by forcing these materials into his chosen space-frame he will make psychology itself a 'natural' science. Variations appear among the behaviorists in their selection of the particular 'segments' upon which their main stress of inquiry is to be placed. Here again, just as in the case of the space-types, the segmentation which we identify as characteristic of a psychologist's construction, and which we adopt for its classification, 'is', in a very sound sense of that verb,

his professional behavior—his own procedure in his work.

We have already considered the case of a space-segment held within the limits of the human skin, and that of a generalization of segmentations styled 'environments.' We have next to consider a space-segment which contains man-in-motion, man-in-action, the behaving-man; this we may describe as a segmentation of gross-body-movement. The physiological organism, often with emphasis upon its muscular organization, is included, and in addition, enough of spatial extension to provide for the waving of the arms, the direction of the glance, the vocal utterance, and possibly—though there is great difference between the many constructions—the reach of thrown stones, the range of the projectile from the fired cannon, or even the full 'seeing' of a star; none of this last, however, except as it may be held rigidly to the constructional frame of successional movement-space.

WATSON announced early that he proposed "to write with the human animal in front of me." He had in view (a) that 'psychological' which was immediately observable by the use of his own eyes; (b) this observable psychological, under the name of 'reaction,' as successor in time to a separately observable non-psychological fact, the 'stimulus'; and (c) the observable reaction, under the name of 'behavior,' presented as a gross-body-movement segment of movement-space. Should a psychologist hold closely to such a program, his research would be comparable to an enterprise with a handful of jig-saw pieces picked up from one corner of a picture-puzzle wherein, by the manipulation of the fragments, the attempt would be made to interpret, not merely all the rest of the puzzle and the materials out of which it was made, but the causes and history of its being made. It is not surprising that Watson did not attain complete consistency along these lines.

1. Preface to *Psychology from the Standpoint of a Behaviorist*, 1919.

His great departure from his program was through the use of the word 'implicit.' For this departure he has received much praise.² It is sufficiently evident, however, that if he had been able to hold to his canon of 'observability,' such a word as 'implicit' would never have been needed, and further, that the word 'implicit' has the earmarks of the old mind-language. There have been plenty of 'potentials' in the history of physics, but those that remain have acquired explicit meaning. Watson's chosen word enables him to incorporate much of the content of the old 'mentalist' psychologies, while still retaining pretense of working in the frame of mechanistic observability. No criticism can run against him for seeking extensions of his segmentation, providing he holds closely within the frame of space he has chosen. The practice of the physical sciences thoroughly justifies it. The criticism here is that he abandoned his frame of space entirely, despite the apparent plausibility of his first extensional stages such as the 'subvocal.' If, in his actual use, he were compelled to define his 'implicit,' the definition could hardly take any other form than "that which is *not* observable."³

Through this verbally evasive device Watson secured, nevertheless, a very important result in directing widespread attention to the close connection of language with thought. True enough, the thought-language identifications antedate Plato, going at least as far back as Parmenides. But they had not been under adequate study in modern psychological research, and the time was fully ripe for stress upon them. We have to consider here, however, not

2. Dashiell, *op. cit.*, p. 485. See also Woodworth, *Contemporary Schools of Psychology*, 1931, p. 59, p. 68.

3. We find wide use of the 'implicit' in recent psychologies and nearly all of it is illicit. A case of definite use in a specific construction is that of Kantor, *A Survey of the Science of Psychology*, chap. XI, where it means happenings "in the absence of the object." On this basis Kantor can also use such terms as 'semi-implicit' (p. 153) and 'incipient implicit' with reasonable definiteness (p. 178).

the advances that are being made under this initiative, but whether Watson's space-frame and segmentation are adequate to hold them. His 'language' in the form of vocal movements and his 'thought' in the form of 'implicit' vocal movements are little more than such jig-saw fragments as we have suggested. They are deprived of all meaning anticipatory to their use as meaning.

In the latest presentations of his construction Watson departs still further from his original position.⁴ Technically the 'observable' appears in the form of hands, language, and viscera in his work, but he makes much use of the 'whole organism' without any definite attempt to find out what kind of a 'whole' it is. A single citation will suffice: "The behaviorist takes the position today that whenever the individual is thinking, the whole of his bodily organization is at work (implicitly), even though the final solution shall be a spoken, written, or subvocally expressed verbal formulation."⁵

WASHBURN in her paper "A System of Motor Psychology"⁶ uses the word 'motor' to cover the same territory and manner of approach that the word 'observable' covers for Watson.⁷ She uses the same type of space construction and the same specialized segmentation within it—namely, that of the 'gross-movements' of a man—and she recognizes this by declaring herself 'mechanistic' in her system of interpretation (p. 93). The "laws of bodily movement" provide her "central explanatory principles" (*ibid.*). It is through them that she secures her 'ratio' theory of con-

4. *Behaviorism*, revised ed., 1930; "Behaviourism." *Encycl. Brit.*, 14th ed.

5. *Encycl. Brit.*, vol. III, p. 329.

6. *Psychologies of 1930*, pp. 81-94. The page citations in the text are from this essay.

7. Washburn herself regards the word 'motor' as having values which hold her position close to that of the functional psychologists, though without their 'interactionism.' In contrast to this, the remark in the text reports my observation of the word-in-use.

sciousness, her interpretation of 'ideas' through "the order and connection of movements," and her constructions of perception and thinking. She uses largely a differentiation of 'static' and 'phasic'; the 'implicit' answers the same purpose for her that it does for Watson, appearing in a variety of alternative descriptions such as 'tentative,' 'prepotent,' and 'incipient'; and for her, too, "language is essential to thought," under a construction in which 'language' is bodily movement (p. 90).

When Washburn, in opposition to the behaviorists, asserts a dualism in which "conscious processes are epiphenomena" (p. 81), she establishes for herself a certain social and professional status—a status, however, that is almost as irrelevant for her scientific work as the church to which she belongs or the political party with which she votes. In employing terms of the old mind-language, she has thus a freedom which the behaviorists officially lack; for either party, however, this is merely a matter of expediency in discussion. Such terms are helpful when cautiously used, dangerous when allowed to run wild, and always creeping back in disguise when the attempt is made to banish them. Workmanship and results are what count; the fate of all the mind-language terms manifestly lies in the developments of the future, not in the dicta of today.

Comparing Watson and Washburn with respect to the sectors of the mind-language, we find that, for the mind-body problem, they present a formally radical but scientifically insignificant opposition, while practically they are akin in technique. With respect to situations of stimulus-object, their linguistic organizations would be notably different if developed, but neither of them goes that far. With respect to the 'isolationist' presentations of the mind-language, they are alike in retaining them and in making their choices of the observable under that control; it may be said for both of them, however, that their procedure contains the germs of its own destruction, should they ever select for their attention problems of the kind that bring the issues

clearly to light. Again, for both of them it may be said with respect to their language-thought constructions that 'language,' taken in the form of 'movements' of an 'organism'—stripped, that is, of all implications of thought and meanings—is no more 'language' than 'thought' is 'observably thought,' if stripped of all its linguistic or other physical form. If thought is implicit speech, so likewise is speech implicit thought: the word 'implicit' is equally good, or rather, equally bad, in the two cases.

WEISS is the outstanding psychologist who, using the movement-space and the behaviorist-segmentation, attacks directly the problem of the relation of segment to segment across the entire range of the space-form. Hunter does indeed make a broad generalization in this region, but so far as I am aware, has nowhere undertaken close and direct study of the problems involved. Weiss' system is left to us in a state of transition, and, in view of the extremely important possibilities of its development, his early death is greatly to be deplored. He had made long steps towards breaking down 'isolationality' in the old mind-language, more particularly in the regions where physical language and mind-language come most closely into contact. Perhaps he had gone as far as was possible by the use of the space-type and segmentation he had adopted; perhaps he was already at a point at which transformation of his entire construction impended. Or perhaps still further development within his space-form is practicable. Investigation of this latter possibility demands attention from those to whom this particular space-form is still a living and vital scientific procedure.

It has frequently been remarked by critics that the behaviorists, in their selections of the particular bodily movements they call 'psychological,' are controlled by the current situations of the developed social life around them. It is not that they deliberately use criteria of this kind; it is rather that they are themselves so immersed in that social

life that they employ materials 'as if psychological,' wholly unaware that the particular phenomena they select are close specializations of that technical or general 'psychological' which they are supposedly studying. The 'social,' thus introduced, is today almost as great a scandal for psychology as it has been from the start for sociology. Whether this 'social' is some vague influence upon the 'individual,' or whether it enters as an 'environment'; whether the psychologist constructs it as a 'product' of individual activity, or whether he goes far toward holding that the individual *is* social; the constructions are full of inconsistencies that extend often to chaos.

Employing the movement-space and the behaviorist segmentation, Weiss adds segment to segment throughout all the range of human performance, and gives his attention to the full collection. He fixates his movement-segments sharply so that he can study them. He then finds that almost everything that comes to him in this form—he is very close to saying 'everything'—is 'social.' The title of his paper in *Psychologies of 1930* is "The Biosocial Standpoint in Psychology."⁸ One may profitably recall that Comte in his early 'positive' presentation saw before him the 'vital' and the 'social' along with the 'physical,' but the 'psychological' not at all. Weiss' 'bisocial' trends strongly towards an outcome in just this Comtean form.

We need spend no time on Weiss' electron-proton theory, which has merely the status of a counterblast to the 'mentalists'; it is just one dogma against another. As an unused hypothesis it is psychologically sterile, and we cannot help feeling at times that the very intensity of his opposition to the 'mentalists' hampers his own development. What concerns us is the working hypothesis he actually uses—that of his observational movement-space, thoroughly

8. I shall cite from this essay by the use of the symbol "A," and shall make collateral citations from the 1929 revision of his book *A Theoretical Basis of Human Behavior* in terms of the symbol "B."

9. B, p. ix.

legitimate as hypothesis, but required to stand or fall by the results it obtains. This working hypothesis receives strong expression in one of the items in his list of the differentia of behaviorism," namely, "the identification of human behavior with human achievement, and regarding human achievement as a form of motion."

He starts with the usual distinction in behaviorist psychology between human objects and non-human objects (or for animal psychology, between animal and non-animal). Using the stimulus-reaction phraseology, and with respect to both of its phases, he here differentiates the biophysical from the biosocial, the former being supposed to link man and not-man, the latter man and man (A, pp. 301-3; B, chap. VII). However, under both his electron-proton hypothesis and his observational-space hypothesis, the biosocial phenomena are specialized outcomes of the biophysical. On the other hand, the biophysical phenomena have become so deeply entangled with the biosocial that it is a question whether they can today be found in any pure or detached state. "Even the simplest biophysical reaction, such as discriminating the taste of an orange, is complicated with social stimuli. . . ." (A, p. 302). In this way it is not man, the organism, but man, the biosocial phenomenon, that becomes psychology's primary and direct object of attention." So important for him is this, that whereas he speaks of the biophysical stimulus, the biophysical reaction, and the biosocial stimulus, he finds himself wholly dissatisfied with the term 'biosocial reaction' and introduces for his specialized needs a new word, 'response,' speaking then indifferently of "the biosocial response" and "the human response."

10. B, p. 151.

11. To appreciate the extent to which Weiss goes in his use of the 'social,' consider the following passages. "Human behavior is made up of those movements and their physical effects which have become socialized stimuli for the same or for other individuals" (B, p. 159). "Human behavior is the totality of the biosocial response systems which establish the individual's social status in the community of which he is a

As has been said, in Weiss we have to examine a system in rapid transformation and growth; and, in appraising him here, we may hold that this term 'response' introduces something entirely alien to the observational space-segmentation upon which he grounds his work; something destined in the end to break down his whole space-frame as inadequate for psychological construction. I suggest this merely as personal opinion, because it is a point that is very difficult to demonstrate definitely through analysis of Weiss' own language. His 'response' is something that is observationally 'social' and not a segment of gross-movement of an organism. By this we are not to understand anything like that "social endowed with the same mystery which has excluded the term *psychic* from science" (B, p. 168) which he so properly repelled, but instead, an observational 'social' in its own adequate space-construction. I have tried at perhaps a dozen different times to organize Weiss' four phrases—"biophysical stimulus," "biophysical reaction," "bio-social stimulus," and "biosocial response"—under such sharp differentiation that they will have clearly separable meanings which can be applied throughout his own technical use. These efforts have failed, and I can only conclude that the frame of presentation adopted by him under the strong early influence of his strictly physical hypothesis was breaking down completely as he proceeded with the development of his observational hypothesis. Here are a few of the comments to be made on his terminology.

He proposes to classify the biophysical reactions in terms of 'contractile' effects, and while he may not be able

member" (A, p. 303). Even for the biophysical reactions, classification by muscle-contractions has had to be abandoned, and "names have been developed for . . . such categories as reaching, peeling, chewing, walking, inspecting, speech, etc." (A, p. 302). "The specific subject-matter of the science of human behavior is the study of the origin and development of those contractile effects and the products of the contractile effects which produce the relationships and objects which in their totality are known as civilization" (B, p. 155). "The mature adult is an organism that has acquired those movements which make up the . . . activities of the community" (A, p. 301).

to perfect such a classification, he can at least set up a definite program for it. Turning to the responses, he finds that he cannot deal with them on any comparable basis; they must be classified "according to the responses in other individuals" (A p. 303). Approaching them thus, he finds that responses fall into two main groups: "speech in all of its forms," and "the social status of the individual" (*ibid.*). Speech however, in addition to being one of the two great types of *response*, is also, for Weiss, "the most characteristic form" of the biosocial *stimulus* (A, p. 302). It is, indeed, the sole form of biosocial stimulus that he mentions in the essay from which these citations are taken. When one has "all linguistic combinations into which a word may enter," he has "a comprehensive treatise on the subject for which the biosocial stimulus is a name" (A, p. 303). Speech is thus both biosocial stimulus and biosocial response; after the study of speech is completed, the great remainder of study for psychology is "the social status of the individual."

In this development Weiss has manifestly allowed his terminological scheme to collapse. Instead of criticising him for it, we will do better to note that he has made a sound advance in observation. Taking Weiss' construction, not 'logically' in snap judgment of our own, but 'durationally' as event in progress, we may characterize it somewhat as follows: If the behaviorist segmentations in the behaviorist spatial frame are expanded to their full human range, language behaviors are observable in differentiation from all other behaviors; one must then regard the language phenomena as both stimulus *and* response; further, one must recognize that almost everything—possibly everything—that enters psychological construction in physical form, comes with a certain coloring given to it by this social-stimulus-and-response language. If this characterization is correct, then we may well believe that the next step Weiss would have taken, after he had had time to get his breath and gain fresh orientation, would have been the recasting of his observations in such a way that his mechanistic space-type and segmentation would lose their

dominant place in his descriptions, and be reduced to a specialized alternative form of expression.

In his presentation, 'language' is "made up of contractile effects of the muscles" and operates as a "substitute stimulus" (A, p. 305; B, pp. 308-10.) It is deeply associated with "sub-reactions" (A, p. 302), which in his terminology correspond to that 'implicit' which we have already inspected in the constructions of other psychologists. Its pursuit into the regions of 'thinking' requires much formulation in terms of the 'interval' (B, chap. XIV). To summarize, language, in Weiss' space-frame, consists of little bits of sectioned movement, *substituting* for other movements, running off implicitly in *intervals*, reaching an astounding dominance for *all* psychological inquiry, and yet to be read, hard and fast for all theory, as little bits of movement.

How is it with 'status'? Here Weiss classifies behaviors as 'personal,' 'domestic,' 'public,' 'vocational,' and 'recreational' (A, p. 304; B, chap. X). Evidently 'status,' so classified, belongs in his space-scheme as a special practical form of description. It is obviously what one secures from his 'sectioned movements' approach. It develops neatly throughout the fascinating field of 'individual' psychology. Unfortunately it has just about the same relation to a 'science' of psychology that a menagerie has to the biological sciences. At best it is like geography as compared with theoretical physics. The phenomena can be described in a movement-space, but an immense amount of interpretative work, involving 'language' in very intricate ways, is required before a scientific formulation can be offered for what is thus crudely set up for our preliminary inspection.

In the last edition of Weiss' book there is one passage in which we find definite indications that his space-segmentation is already in process of transformation. "The social factor," he writes, "in the last analysis reduces to a physical complexity in which the interactions between individuals cover much wider space and time limits than in the

biophysical stimuli and reactions" (B, p. 159). The special segmentation which he used primarily was itself a survival of the very mind-language which he himself so fiercely attacks in another sector of its application; his excessive stress upon it thus begins to dissolve at the moment his attention is properly directed to it.

A similar conclusion is reached from an examination of Weiss' use of the term 'environment.' In his work the whole problem of environments with respect to human behavior is brought under process of analysis and redetermination: not, indeed, in any system of organization which he himself formally makes, but in a vastly more powerful way, by the close study of situations in which environments are phases. 'What' it is that is to be taken as having environment, and 'what' it is that is environment to that former 'what,' are still set forth in an old form, one which has been appraised by us here as a mind-language survival of the old 'soul' and 'mind' and 'person.' Thereupon, by unification of all the phenomena in a movement-space and by close inspection of them there, the very criteria of the respective 'whats' are on their way to a closer organization in radical replacement of ancient tradition.

We may say further that in view of the litter of conflicting expressions which has resulted from Weiss' attempt to carry the old terminology of stimulus and reaction into his biosocial observations, there is great probability that that very terminology itself must cease to claim structural dominance; and that it can survive only by a careful specification of the ways in which stimuli in a narrow sense, and objects in a wider sense, are linguistically organized.

In his discussion of postulates in the revised edition of his book, Weiss made several small changes of terminology which are nevertheless highly significant as clues to the possible development of his line of thought. The assertion in the first edition that we do not need "both a mental and a physical system" now becomes that we do not need "both a mental and a biosocial system" (B, p. 426). The word 'individual' that he had formerly used gives place to

'organism.' In short, his excitation over the mind-body problem was declining, and his interest in the man-man problem was growing, though his attention had not as yet been directed specifically to the organism-object problems which require examination along with the others.

We find him asserting finally that through his biosocial point of approach "the so-called mental categories are absorbed in the ontogenetic and phylogenetic analysis of biophysical reactions and biosocial responses" (A, p. 306). Our examination can give only a limited support to such a claim. We must praise him, nevertheless, for an admirable example of determined endeavor, seeking always, though not yet fully attaining, close consistency within a carefully chosen frame of work. Whether a scientist succeeds or fails by the ordinary tests of results established, he can render no greater service to his fellow workers than by taking a clean-cut position, sticking firmly to it, and developing all that he can find in it.

X. ACTION-SPACES: WOODWORTH, DUNLAP

In contrast with the segmented movements of the orthodox behaviorists, we find 'activity' a frequent choice of psychologists for their basic envisionment of their phenomena of inquiry. In some cases the word 'activity' itself is the main reliance; in others, the presentation may have verbal modification sufficient to give it an appearance of conformity to the position of the mechanists. The construction which such psychologies use may here be distinguished, as a matter of convenience in examination, by calling it an action-space.

The 'activities' have durations, and in these durations they are taken directly as 'the facts' under investigation. The durational characteristic is accepted casually, and with as little analysis as the mechanist gives to his movement-space. Clotted in one way or another, these activities are made to appear as durational 'wholes.' The 'wholes' purport to be 'scientific' presentations, but we shall find that they have strong affiliations with the 'mind' or 'person' of the mentalist, whether or not this kinship is gratefully recognized.

The word 'activity,' in its variety of current applications, is worth a moment's attention. It is certainly a great convenience, serving for physical, biological, and psychological phenomena alike. It can be made to apply all the way from radiant energy, through mechanics, organic life, and the commoner overt behaviors, to the farthest procedures of the 'intellect,' without ever seeming flagrantly to fail its pronouncer. It yields a semblance of transition from successions to durations and carries with it enough appearance of texture to give substantial satisfactions to those who use it. It *seems* never to fail; the question remains, nevertheless, as to how well it really serves. Is it safe or specious? The answer must be sought by inquiry

into the linguistic coherence of constructions which depend upon it. How does the word 'activity' itself act in science, and how do its affiliated words act?

Despite their marked dissimilarities, Woodworth and Dunlap may be chosen as representatives of construction in action-space. Dunlap is primarily physiological in his problem-setting and in his methods of research and his approaches to interpretation. He accepts in most matter-of-fact way the ordinary descriptive space and time passed along by the natural sciences from their earlier history. Upon this he grafts his own manner of presentation—his own space-form—in terms of patterns and integrations. Woodworth is equally matter-of-fact in accepting the ordinary descriptive space, but he approaches from the opposite direction. He is far less interested in the physiological forms of presentation, and concentrates, instead, on developing out of the mind-language a set of derivatives of his own. These turn out to be derivatives which Dunlap can closely parallel from his own approach. Where Woodworth has a kindly inclination towards a certain 'psychic plus' in his construction, Dunlap matches him by a forcible exclusion of certain important apprehensional problems and by their banishment into a region he calls 'metaphysics' or 'philosophy.'

Bringing these two men together is, it must be remembered, a taxonomic procedure of the type described in chapter III. It has no pretense of giving any 'deeper insight into realities'; it is merely a marking out of certain 'traits' of construction for separate study, with full recognition that there is as much overlapping among the 'products of mind' as there is in the branchings of animal life. Both Dewey and Madison Bentley, whom we shall examine in the next chapter, have points of similarity to Woodworth and Dunlap; these points, however, are not the points of high significance for the survey we are making.

WOODWORTH in his paper in *Psychologies of 1930* styles his system "Dynamic Psychology," a title in which he

makes the word 'dynamic' stand expressly for "the use of the notions of cause and effect" (p. 328).¹ All the causation must be read in terms of 'activity,' and activity takes the form of "activities of the individual." "Psychology is a scientific study of the activities of the individual."² "Everything centers in the individual, from the psychologist's point of view" (p. 328); and again, with heightened stress, "Psychology is the study of the activities of the *individual as an individual*" (p. 331; italics mine).

The word of his choice, 'activity,' has for Woodworth double values. First, it gets rid of the inconvenient 'substances,' 'subjects,' or 'things' of the old mind-language; second, "we can combine experience and behavior under the inclusive term, activity" (p. 331), and expect this term to cover the positive findings of all schools. This, unfortunately, is the kind of procedure that proposes to eat its cake and keep it, too. It makes the individual take the form of 'activity' and nothing more, and then turns around and makes that 'activity' an individual and allots him causal status.

Consider Woodworth's distinctions between psychology, physiology, and other sciences. The 'individual' is presented as something lying *between* the subject matter of physiology on the one hand, and "the doings of the people," i. e., the 'sociological,' on the other hand. In this asserted intermediate position, psychology is to "keep its eyes fixed"³ on this individual as activity. In effect what Woodworth requires of us is that we permit, or compel, ourselves to 'see' this active individual as detached or detachable *both* from the physical organism and from society at one and the same time. Should he request this of us merely as a provisional methodological device for special purposes of study, it would be wholly proper procedure. We could then test his proposal

1. Page references in the text are to the essay in *Psychologies of 1930*. Collateral citations to others of his writings are made in footnotes.

2. *Psychology*, 1929 ed., p. 3.

3. *Ibid.*, p. 3.

carefully to see what the construction was worth. We should be very far, however, from having as the start of our work a safe form of discrimination between that science and others. Nevertheless, it is this latter position which he himself takes and which he demands that we take. To take it we must be able to 'observe,' to 'see' such an 'individual' concretely, definitely, vividly, and reliably.

Try this, not by way of making easy the path of professional activity, but for clear scientific vision. You will quickly find that either physiology must fade out of the picture (if there is any physiology), or sociology must fade out (if there is any sociology), or, if you insist upon keeping them both, then your 'individual' must fade out. Recall, if you wish, the development Weiss found forced upon him in a different space-frame, but do not depend upon that; here make the appraisal directly in Woodworth's own frame of activity. The activity before us may be either activity of the organism or activity of an 'individual-in-society.' Psychology may be studied as a branch of physiology or as socialized behavior; however, if it is studied in both ways and if, in addition, the activity of the individual as psychological is inserted, then this latter will not be activity in the sense of the other activities, but a mere camouflage for certain of the older mind-language references.⁴

To improve his distinction between physiology and psychology Woodworth falls back upon "the formula that psychology considers the individual as a whole" (p. 328), but this 'formula,' at its best nothing but a stop-gap, becomes peculiarly inept when applied in this way for the segregation of 'activities.' Indeed, in his further summing-up (p. 335), about all he can say of it is that it furnishes "at least a good approximation to the facts," and that he likes the phrase "because it seems to take care of the mind-body problem sufficiently for the purposes of science."

4. Compare our later examination of 'actor,' 'act,' and 'fact,' chapter XXIII, and the discussion of sociological and psychological techniques, chapters XXVIII and XXIX.

Here manifestly we are at the heart of Woodworth's construction. Like many others, he concentrates so much on the mind-body problem that he wholly loses sight of the existence of the organism-object and the man-man sectors.⁵ His "individual as an individual" is supposed by him to accomplish, as actor, everything that happens in both these sectors, provided only that a neat statement for his 'mind' and 'body' can be secured. His own development works out as follows. He insists that experiencing is fact for psychology, that "to see blue" is fact, and, moreover, that "seeing blue is identically the same process as that which the physiologist describes" (p. 335). Using then the term 'activity' for this process, thus 'identically the same' with the physiological process, he specifies activity as 'individual' and goes to work content. Perceiving, for example, 'is' activity, and the activity 'does' the perceiving. This is one way of talking, and it may sound all right, when it is used; but it entirely ignores all the difficulties of object-stimulus, to say nothing of those of man-man. In this way Woodworth is able to define stimulus, when he likes, as "whatever arouses the individual to any activity";⁶ or again, when he likes, as "any form of energy acting upon a sense organ and arousing some activity of the organism."⁷ In the former case the 'object' is taken into account; in the latter, it is excluded. Nevertheless, "what we usually observe," he says, "is not simply groups and patterns, but things and other *objective facts*."⁸ He makes progress in his use of 'activity of the individual as an individual' to secure the substitution of verbs and adverbs for nouns and adjectives, but his 'drives' as specially significant clottings of activity tend to regain substantive status; the "S-R unit" that he rejects tends to be replaced by 'response' as itself a unit;

5. In this respect Woodworth has marked similarity to Dashiell. If Dashiell's psychology may be called 'mentaloid,' Woodworth's may be called 'neo-mentalistic.'

6. *Psychology*, p. 103.

7. *Ibid.*, p. 225.

8. *Ibid.*, p. 394.

and 'imageless thought,' which he regards as "not dead, but only dormant at the present time," rears its head suspiciously just behind the proper confines of 'activity' itself.

"Psychology," Woodworth concludes, reflecting upon his presented construction, is now "free to deal with the facts of sensation, feeling, and purpose, as well as with motor activities, without any fear of getting outside of the field of natural science" (p. 335). Exactly. But the task of psychology as science is, then, to go ahead and deal with the problems, not to rest satisfied with its state of freedom.

DUNLAP makes his approach to investigation from the physiological base just as directly as does Dashiell, but he does not find himself so easily able to stop there. He uses an action-space in his later developments much as does Woodworth, though not with the same verbal stress on the word 'activity.' 'Integration' and 'pattern' are his terms for the scientific development, with "one philosophical problem" expressly left over as beyond scientific reach.¹⁰ It is illuminating to trace his development with respect to stimulus and object from his earlier work to the present.

In his *Elements of Scientific Psychology* he sets before us 'experience' differentiated in the forms 'ego,' 'awareness,' and 'content of consciousness.' The word 'ego' is eliminated as lacking scientific significance; the word 'awareness'¹¹ is read as referable for study to the neurological organism; the phrase 'content of consciousness' is read as introducing the environment, or aspects or phases of it

9. *Contemporary Schools of Psychology*, p. 37.

10. *Psychologies of 1925*, p. 328; covered by his general reaffirmation in *Psychologies of 1930*, p. 309. Compare also *Elements of Scientific Psychology*, 1922, pp. 43, *et passim*.

11. Where 'awareness' is read by a psychologist as the equivalent of 'awakeness,' it is often astonishing to find him treating 'sleep' as a very special line of investigation not at all necessary for consideration in the main framework of his 'general psychology.' Just what scientific status 'awake' has except in a wider construction that includes 'asleep' in full collateral development, is very difficult indeed to comprehend.

(including at times the organism itself, or aspects of it). 'Objects' appear in the 'content of consciousness.' How, then, does he deal with 'stimuli'?

For 'stimulus' Dunlap moves over to the language of developed science, in terms of energy and of mathematics. Stimulation, observed as fact, is "the process by which the environment evokes reactions," with the additional limitation in terms of life and of behavior maintenance that "a stimulus is an external force which produces an adjustment of the organism." The stimuli, then, are "the specific forces which act on the organism." Passing from factual to technically scientific expression, "physical stimuli are mathematical expressions and nothing more." "Sensory objects . . . are represented by stimuli"; but also, "loosely, . . . we apply the term (stimulus) to a simple or complex sense object of which the physical stimulus is the mathematical expression."¹²

Here is a position which, if further developed, reaches a situation so terrible that it may well be called 'philosophical' and relegated to outer darkness. Taken, however, as a preliminary organization of language—not yet to be dignified by the name 'hypothesis' but looking towards the establishment of hypothetical procedure—it is a thoroughly laudable enterprise and exactly in the line of what is necessary if psychology is to become a coherent science. Its difficulty is no reason for resolving to ignore it. The great need in this respect is strikingly evident if we examine Dunlap's terms 'data' and 'observation' in connection with the above exposition. He asserts that "data must be the results of immediate observation, and not inferences." He takes 'content of consciousness,' 'awareness,' and 'ego' outright as 'data' of psychology. He then asserts that the last two of these are *not* observable. And to cap all this, the main 'data' he himself uses are physiological conditions which he expressly declares, for psychology, to be not "immediately given," but "inferred or discovered as a condi-

12. Citations from *Elements of Scientific Psychology*, pp. 22, 21, 43, and 44, in that order.

tion.”¹³ I mention these points not by way of querulous verbal criticism, but to stress the problem before him.

The later route that Dunlap has followed, after his relegation of such matters as the above to ‘philosophy,’ has also serious linguistic involvement. The first three pages of his paper in *Psychologies of 1930* are devoted to making the working-significance of all words organized around the term ‘consciousness’ more usable for research, and his position here is substantially the same as that which we have found in Woodworth. His dependence upon the terms ‘integration’ and ‘pattern’ in replacement of “the old stimulus-response viewpoint” is plainly a dependence upon special linguistic devices, even though his own stress is still ‘factual’ rather than systematically ‘linguistic.’ “Integration is the cardinal process”; “the real stimulus is a *pattern*”;¹⁴ “perceptual patterns cannot be considered separately.”¹⁵ His muscle-interpretation, as contrasted with the older brain-interpretations, is thoroughly in this line of development, even though his use of the cerebellum as ‘muscle-substitute’ has a strong flavor of lapse into older attitudes.¹⁶

In general, we may say that the same line of development that enabled him to eliminate the ‘ego’ from direct investigation in his earlier work should lead to an elimination of any ‘content of consciousness’ as distinct from ‘awareness’; and that just as in his earlier work he sketched a crude adjustment as between the mathematical language of science and the practical every day language of observation, so must this endeavor be carried consistently forward. But the body-mind solutions are imperfect without taking into account the stimulus-object situations, and the two of these together will fail of consistent linguistic adjustment until the search is pursued across all the problems of the isolationist phases of the old mind-language.

13. *Ibid.*, pp. 28, 29, and 24.

14. But compare his *Habits, Their Making and Unmaking*, 1932, p. 5: “Living, so far as psychology is concerned, is made up of responses to *environment*” (italics mine).

15. *Psychologies of 1930*, p. 312.

16. *Scientific Monthly*, vol. 31, p. 107.

XI. MIND-LANGUAGE RECONSTRUCTIONS: DEWEY, M. BENTLEY

John Dewey and Madison Bentley provide the programs of psychological construction which we shall next analyze and compare. Neither adopts segmented movements as his phenomena of primary observation, nor is either content with 'activity,' whether clotted or patterned, as his adequate clue to description. Both go further in their appraisal of the problem before them—indeed, so much further that I have felt justified in placing them side by side to illustrate the process of reconstruction which the old mind-language is undergoing and must continue to undergo.¹

As all students in this field know, these two men differ greatly in historical background, in professional affiliations, and in specializations of inquiry. Upon many important issues of psychology they are found in radical disagreement, and they are not at all alike in the steps by which they arrive at the characteristic which I shall stress as common to them both. They are alike, however, in that both of their systems exhibit steady growth, and that the plain line of this growth is towards heightened consistency of observation and expression.

Both Dewey and Bentley recognize and employ the physical and vital settings of psychological research as definitely as any other psychologists. Neither degrades this setting to a mechanistic form, nor attempts to secure interpretation by crude manipulation of the terminologies of physics or biology. Neither of them hampers his procedure

1. Should either or both of them protest against the joint characterization I give them, these protests alone would not disturb my opinion, which is based upon my study of the manners in which they work, and of the trends which their work seems to me to show. Deeper analysis might well show me in error, but the personal statement of any theorist as to his own position is only one detail among many that must be taken into account in whatever appraisal we make.

or limits its power by orienting it to some non-physical or metaphysical overlordship. Both are explicit in recognizing the durational form for their observation and presentation of psychological phenomena, and in seeking further analysis of it. If neither of them is found to hold fully and invariably to this durational form in his development, the fault lies not so much in program or intent as in the survival of remnants of older manners of treatment already on the road to abandonment.

In Dewey we shall find a highly generalized form of postulation, with which are associated certain specific psychological hypotheses which lead directly towards a radical change in the methods of all psychological inquiry; nevertheless it will appear that when he comes to close contact with psychological presentation he falls back upon an older form. In Bentley we shall find a less explicit recognition of closely similar hypotheses, combined with their somewhat more extended application; but again we shall find a notable cessation of development at a point which can be definitely identified and explained.

The great similarity may perhaps be expressed as follows: Both men see very clearly that psychology must have a frame of construction in harmony with the more general frames of established science, and that it must continually hold this need in mind, and never be content with easy makeshifts; at the same time, both of them hold closely to the psychological in its specific quality as psychological, for their field of phenomenal inquiry. It is exactly in these characteristics that I find their work leading inevitably towards the reconstruction of the mind-language. Under the linguistic hypothesis for space-forms which we are using, such a reconstruction involves in the end the establishment of an adequate psychological space-form—one that is directly and primarily psychological, and that is directly justified in its pertinent uses as fully as is any space-form that any other science employs. Once well started on this path, there is no stopping short of a much wider development than either Dewey or Bentley has yet offered, and the

main characteristics of the development will be the same in both cases.

DEWEY, in his essay *Conduct and Experience*², puts important stress for psychological construction upon problems that arise in the region which we have described as the fourth sector of the mind-language difficulty; the region, namely, of organism and environment, considered in those forms in which influences from the mind-language have irradiated the primarily physical formulations. Thus far we have found no construction that takes explicitly into account the situations with which the investigator is here confronted. The proposition which Dewey sets forth and the hypotheses which in consequence he proposes to employ will doubtless receive recognition by lip from all psychologists who fall within the groups to which we have been giving consideration; casual recognition is, however, something very different from that definite adoption and development in psychological construction which Dewey proposes.

Organism and environment, he holds, are not before us in sharp severance from each other; instead, they fall together within a common fact or situation of research out of which they are differentiated by our own analysis. "Interaction is the primary fact, and it constitutes a *trans-action*" (p. 411). "Only by analysis and selective abstraction can we differentiate the actual occurrence into two factors, one called organism and the other, environment" (*ibid.*).

In setting up this proposition and in developing it psychologically Dewey takes expressly the durational point of view. "Behavior is serial, not mere succession." "Context," "temporal spread," and what he calls "the vector property" are present in all that is psychologically before us (p. 412). "No organism is so isolated that it can be understood apart from the environment in which it lives." Structures lie in "the recurrent modes of interaction taking place between what we term organism, on one side,

2. In *Psychologies of 1930*. Page citations in the text are from this essay.

and environment, on the other" (p. 411). Stimulus is "function, in a mathematical sense." Something "breaks in upon an activity already going on, and *becomes* a stimulus in virtue of the relations it sustains to what is going on in this continuing activity" (p. 413). It is always "change" that we study. "A stimulus is always a change in the environment which is connected with a change in the activity" (*ibid.*). Both his assertion and his development are as emphatic as he can make them—namely, that durational 'trans-action' is the direct objective of psychological study.

His position here may rightfully be read in the light of his general construction of language, experience, and science. His attitude towards science and thought as developed in language, with this 'language' as the communicative procedure of men in society, was cited at the beginning of chapter II.³ Behind this lies his general philosophical use of the word 'experience,' to which we need give no attention here except to note that he sets it forth always as 'method.' In this background he offers us what is in effect, though not in form, a further specific postulate for psychological inquiry: "Identifying modes of individual experiencing with modes of behavior identified objectively and objectively analyzable makes a science of psychology possible" (p. 418).⁵ The 'identifying' here is a social-lin-

3. For additional development see *Experience and Nature*: "The product of knowing is *statement* of things," the word 'statement' here being used in contrast with 'existential equivalent' (p. 16; also pp. 38, 169, 173, and Chapter V generally). 'Language,' for Dewey, is of course never the narrowly sectioned body-movements in the mechanistic space of the behaviorists. Thus: "Personally I have no doubt that language in its general sense, or symbols, is connected with all mental operations that are intellectual in import, and with the emotions associated with them, but to substitute linguistic behavior for the quality of acts that renders them 'mental' is an evasion" (*Psychologies of 1930*, p. 416).

4. *Experience and Nature*, p. 10, *et al.* He retains to great extent, however, an assumed basic distinction between the 'philosophical' and the 'scientific.'

5. Compare Weiss' assertion cited in chapter IX that one of the great characteristics of his behaviorism is "the identification of human behavior with human achievement."

guistic process; in the outcome, everything will depend upon the rendering given to the word 'modes.'

What, now, is his characterization of "the subject-matter of psychology" under these assertions and in this setting? It is "the behavior of the organism so far as that is characterized by changes taking place in an activity that is serial and continuous in reference to changes in an environment that is continuous, while changing in detail" (p. 414). This language is not so sharply formulated as one could wish, but its purport under his formulation of 'trans-action' should be unmistakable.⁶

So much for what psychology, according to Dewey, ought to be. What, now, does it actually become at his hands? "Psychology," he says, with special endorsement of the work of Percy Hughes,⁷ "is concerned with the life-career of individualized activities" (p. 414).

How, one may ask, can this come about? If the direct data of psychology are 'trans-actions' across organism and environment, and if such trans-actions are 'changes' running in durations of time with respect to organism and environment alike, why should 'psychology' itself become expressly the study of the "life-careers of individualized activities"?

It is clear enough that such a study as that of life-careers is both possible and thoroughly practicable, and that for many investigators it may be an intensely interesting study; moreover, if the consensus of psychological opinion so determines, then this type of study, and this only, may have the name 'psychology' assigned to it for its exclusive use. In Dewey's own construction, however, there lies across and around such a 'psychology' a great field of inquiry, already broached and immensely wider in its meanings and enormously more significant in its problems. Within this wider field—this greater psychology—the

6. In his reprint of this essay in his book *Philosophy and Civilization*, he changes his phrasing slightly so that it reads "an environment that persists, although changing in detail."

7. *An Introduction to Psychology from the Standpoint of Life-Career*, 1926.

specialized 'life-career psychology' will be a descriptive branch of knowledge, dependent, even for the simpler accuracies of its descriptions, upon the results of research in the wider form.

The procedure by which Dewey reaches his limited definition may be followed easily. He uses the term 'qualities' with the strictly linguistic value of first-hand description—traits that enable one to discriminate and identify—and argues with overwhelming success for the recognition of the 'mental' as a term denotative of certain discernible qualities (p. 415). He shows further that there are definitely specifiable 'qualities' of behaviors to which the term 'conscious' refers (p. 416). Among the many possible uses of the term 'experience,' including his own very wide uses, he now selects and stresses for the purposes of psychological research, one in particular which he writes down as 'experiencing' (p. 417). "Experiencing," he says, "has no existence apart from the subject-matter experienced" (*ibid.*); a position fully in accord with his development of 'trans-action.' It is, however, assignable to the 'individual' human organism, to the 'man' himself, as its locus of observation. It is so assignable, nevertheless, only under the operation of a great historic procedure which Dewey illustrates for this particular case by showing that the very discrimination of 'experiencing' from the 'experienced' would hardly be before our observation at all, if 'other men' had not forced our attention upon it (pp. 417-8). This position, again, is in full accord with his language-experience background of postulation and method.

'Experiencing' is now before us as secured by 'selective abstraction'—to apply Dewey's phrase from a passage previously cited—in situations of 'trans-action,' and is assignable to the human organism in terms of a socially linguistic

8. Madison Bentley's 'operative modes'—the ideals, though not the present achievements of his psychology—are counterparts to Dewey's primary prescription for 'experiencing.' Kantor's construction, to be examined in chapter XII, holds consistently throughout to exactly that requirement which Dewey calls 'trans-action.'

evolution. It is this process, this activity, this experiencing of the human organism which is the specifically psychological. Then, *presto*, without a single further word of explanation, this trans-actional experiencing is transformed into the "acts and attitudes" of the person: "acts and attitudes abstracted from the total experience" (p. 418; also pp. 419-20). It is these which make up the 'life-careers,' and it is these upon which psychology is to concentrate its attention. Behavior becomes "a developing temporal continuum marked off into specific act-situations" (p. 414). Here is where the break appears; on the one hand is Dewey's postulation and forecast of what the subject-matters of psychology should be, and on the other, his closer specification as to what they are.

We might discuss this development in terms of stimulus-response, of part-whole, of process-content, of structure-function, or (since Dewey has twice made significant use of the word 'abstraction') of abstract-concrete. Structures, Dewey had previously told us, lie in the regions of trans-action. Now, however, after abstracting the organism from the total situations of trans-action, and after abstracting experiencing with reference to the organism, he 'abstracts' (he should have said 'isolates') 'acts' from the total experience. This phenomenon, the 'act,' should be process or function, and if structure, it should be structural to the full trans-action. Instead it becomes quite 'concretely' a 'part,' or 'content,' or personalized 'response.' The issues that are here involved will require extended examination in later chapters of this book; for the moment a slight illustration will suffice, and I will permit myself to choose it directly in terms of my most immediate personal experience.

Consider the 'act' in which I am now engaged. I have here a table, a typewriter, a copy of *Psychologies of 1930*, and sundry memoranda made in the course of the last few months. On a table near by are copies of several books written by Dewey. An 'act' is in progress; namely, the

writing of this paragraph. This 'act' certainly implicates—and in its wider spatial-temporal envisionment directly involves—all the items I have mentioned, as well as my fingers and body and the rest of 'me' and long histories of all of these phenomena. It is certainly 'trans-action,' and it certainly involves 'experiencing.' Certain 'parts' of it also can be taken out and inspected as 'life-career'—if that happens to be worth while. But such a part so inspected will not be an instance of the abstracted 'experiencing' which Dewey has shown should be psychology's primary concern, nor will it be a 'structure' of the full 'trans-action.' It is not 'abstract' in any ordinary rendering of that word; it is 'concrete,' if the word 'concrete' means anything at all, which is very doubtful; it is full of 'content'; it is a bit of segmentation of 'what is happening,' viewed as if 'within' the boundaries of the 'organism' or 'person.' If we want to study this bit of 'what is happening' with any thoroughness at all, we shall have to deal with it elaborately in a frame of wider happenings across thousands of years and thousands of miles—a frame wherein it secures a significance vastly greater than that of 'life-career,' though perhaps not so currently interesting. As 'act,' spatially delimited, it may have a certain quasi-anatomical status. It is most certainly neither synonym nor substitute for *experiencing*.

We found Weiss, in his movement-space, overwhelmed by a something called 'social.' We find Dewey generalizing for this 'social,' and for its spatial form, in a manner vastly more competent than the mechanist has ever attained. But we find Dewey falling back upon 'acts' in Newtonian delimitation, suggestive of Weiss' forms of 'status.' We must conclude that Dewey's dominant interest in problems of ethics and logic has checked his psychological construction just at the point where it was about to expand into a wider form than, perhaps, the world has anywhere yet seen; and that thereby the need for further development is made impressive.

MADISON BENTLEY rests his development in his essay in *Psychologies of 1930*⁹ very closely upon the word 'function.' This is a word of varied applications which at one time served in psychology to give name to a 'school' that has even today some surviving representatives, sharply enough opposed to Bentley's own manner of approach. As he himself uses the word, however, it has lost its older telic values and is well advanced on the way towards linguistic coherence. By its aid we find him seeking a thorough reorganization of the terms of the mind-language and of all their references. We have to appraise the extent to which he has carried this work and to note some of the indicated possibilities of further progress.

Consider the changes in his terminological development during the last ten years. In *The Field of Psychology* (1924) a "psychosomatic organism" was set up in a form of functioning from which 'experience' was still held in distinct severance.¹⁰ His essay in *Psychologies of 1925* stressed the "psychological organism," and in 1927 "functional totalities" were emphasized.¹¹ Both of these characterizations, "psychological organism" and "functional totalities," disappear from his paper of 1930. Here we find, instead, a single structure, a "total system" or "neutral organism" (p. 97), with respect to which either its "P-functions" (psychological) or its "B-functions" (biological) may be studied, dependent upon what field of scientific research we choose. There is to be no "cleaving" of a "physical half" from a "mental half," but instead, "a way of regarding, a point of view" (p. 98); it is for this manner of treatment

9. Page citations in the text are from this essay.

10. Thoughts, desires, resolves, etc., appear as "products of the total or psychosomatic organism" (p. 18). "Experience" is "related" to the "total organism" which "produces experience only by virtue of its cooperative functions of the psychosomatic kind" (p. 33). The general organization of the book is better evidence of his attitude, however, than can be secured from any isolated citations.

11. *Amer. Journal of Psychology*, v. 39, p. 59.

expressly that he uses the term "function." Function is thus "operation or activity" (p. 98), but it is just as certainly method, hypothesis, linguistic-scientific procedure. One may readily draw a comparison here between Bentley and psychologists whom we have classified as building directly in 'action-spaces.' But the similarity is only superficial, since Bentley's construction runs far deeper than a complaisant acceptance of 'activity' as a useful term.

He does not, it is true, make good his 'functional' construction for the whole field he investigates, as we shall see when we examine him with respect to such words as 'environment,' 'object,' 'product,' 'activity,' and 'space.' There are certain significant lapses from his principle and much of that clotting of activities into very special presentations, such as we have discussed in the case of Woodworth. But he does make good his assertion of "an attitude of utter neutrality" as between biological and psychological study (p. 97), and he eliminates as thoroughly as the most confirmed physiologist, and much more comprehensively, the whole mind-body sector of the mind-language difficulty. Here, having denied all substantive distinctions of body and mind and having proposed to study psychological functions separately, but having also declined "either to call these functions conscious or to extract them from conscious antecedents" (p. 108), he recognizes that certain readers may reproach him "for straining out all the essences of the 'mentalist' without replacing them by a substitute." His position in retort (in substance, though not in specialization of terms) is precisely that upon which I am relying, under a fully linguistic hypothesis, in the present investigation. "Our answer would be in such a case that nothing has been lost and nothing annihilated. Whatever there was of actual existence and of actual organic resource must therefore appear in some other form or in another context" (p. 108). This, however, leads him at once to a most significant remark, which negates in its possibilities a good part of his own detail of development and might easily lead to a most

important extension of his construction.¹² "Since our study," he writes, "is pivoted upon certain functional activities which, like the physiological functions, have behind them the anatomical structures and the organized unity of the body, we shall have to look to their products and issues to replace our 'conscious' deficits" (*ibid.*).

We turn now to special features of his development. The 'concept,' or scientific technique, of 'environments' Bentley ejects totally from his P-system and its study. He does this in spite of the fact that the P-functions are functions of a T-system, a neutral organism, which simply *can not* be brought before our attention for study except in the differentiation of organism and environment. Nevertheless, upon this point Bentley attempts to establish a linguistic dictatorship. "The concept of the environment has no place in psychology." The P-functions obliterate the line of division at the spatial limits of the body which the environmental concept requires" (p. 102). "Under our conception of psychology the environment does not there exist. Once admit it to psychology, and it destroys the aspect of the living organism which is *agent*, and so, of course, the P-functions drop out" (p. 111).

It is, we may suspect, this italicized 'agent'—this unanalyzed survival of the isolationality aspects of mind-language—which is at the source of the difficulty. In a concrete illustration, Bentley suggests to us the same type of organism-environment situation which Dewey has expressly hypothesized. He considers a situation containing car, locomotive, and whistle, along with hearing and seeing (p. 101). "The plain facts," he says, "are 'car,' 'whistle,' and some kind of a functional relation to an organism." That statement, for preliminary purposes, is unexceptional. But what is manifestly needed at once is good sound constructional meaning for the terms 'functional' and 'relation' in this particular apprehensional situation. Instead of supply-

12. My development in chapters XXVIII and XXIX may be examined from this point of view.

ing this, Bentley drops back upon his "living organism which is *agent*" and at once transforms his "functional relation *to*" an organism into a P-function of an organism. If he had declared that that particular specification of 'environment' which is used by biology did not apply to the P-functions he was studying, his position would be unassailable, since therein lies the main ground of differentiation between a biology and a psychology. But it is altogether another matter to reject 'environment' totally and absolutely in the study of situations in which the perceived object and the physical-physiological stimulation must be organized together in a common system of interpretation.

Here his position seems comparable with that of the behaviorists when they strive to eject 'consciousness.' It simply can't be done. The more one shrieks about special words, the more the 'facts'—whatever they are—come back to take revenge. The behaviorist faced a scandalous abuse of the language of 'consciousness.' Bentley faces an equally scandalous abuse of the language of 'environments'; indeed, he faces worse abuse, for if in the whole range of scientific and tentatively scientific terminology there is anything more childish, trivial, and abhorrent than some of the current 'environments,' social and personal, I have failed to recognize it. Nevertheless, what is needed is not the ejection of the 'concept' of 'environment' from psychology but instead, a greatly expanded construction which will do justice, both for purposes of distinction and of mutual organization, to the striking variety of environmental situations that require investigation. To make a radical distinction between the B-functions and the P-functions, granting environments to the one but not to the other, is indeed to lapse from the very principle of functionality itself, as Bentley has set it up, and to return, in actual technique if not in formal expression, to that very severance of mind-functions from body-functions which he himself contemns.

The 'agent' which Bentley sets up after he has ejected environments occupies a space-segment similar to that used by Dashiell (or perhaps with some extension, to that of

Washburn or Watson), but not in the same space-type. In all three cases there is the same fixation to the isolationist values of the old mind-language. The best proof lies, not in any one's personal inspection or say-so, but in what the outcome is as the systems develop. One may compare Dashiell's "one principle necessary to explain all human acquisitions," cited in chapter VII, with Bentley's assertion that "we have at hand all the necessary materials as well as the guiding principles for a genetic account of the P-functions and of their issues and outcomes" (p. 107). Dashiell speaks in terms of 'conditioning,' Bentley in terms of 'P-functions'; as isolationists, however, they occupy the same ground. Dashiell's 'brain' and 'body' are 'producers' of just the same things that Bentley's 'T-system' produces, or that, in his occasional alternation of expression, his 'P-functions' produce.

This 'agent,' as functional activity, with no splits between physical and mental and without substantive 'faculties,' has full durational form. Nevertheless, we may note one serious lapse from this construction: namely, the introduction of 'successions' as between "such topics as habit, instinct, practice, fatigue, learning, and conditioning" on the one side, and the P-functions on the other. Of the former he says that they "chiefly appear as conditions and *antecedents* before the functions" (p. 111). This we may take, however, as merely a small survival of 'school' antipathies, and without direct importance for the appraisal of his construction.

As we might anticipate, the word 'object' is unwelcome and Bentley would gladly avoid it altogether if he could (p. 109). He would prefer to study strictly the "operative modes" of the T-system, such as announcement,¹³ initiation,

13. I am giving no attention to the specializations and substitutions of words which Bentley employs. 'Announcement,' for example, first introduced in connection with his car-whistle-organism illustration, has an impressionistic value for his presentation, but hardly any further merit. Such words and their changes secure no great importance until they enter fully into the constructional values of the coherent system of interpretation in which they appear.

participation, resolution, interpretation, etc. (p. 110). But he is driven to talk continually of 'products,' 'produced objects,' 'functional products,' and 'functional termini' of the P-system (pp. 107-13).

Such 'products' include the physical world as known, and all social organizations and presentations (see his list, pp. 108-9). He is as deeply involved as is Weiss with these 'products.' And exactly as with Weiss, though in different construction, his 'products' refuse to remain 'products.' Much of the time they enter as 'conditions.' His formal list of the functional determinants of the 'living organism' has 'products' for half its entries (p. 107) and he goes on to say: "In our case, life taken in the large is the *constantly reorganized product* of all these factors." Again he writes (p. 113): "The point of view here selected would find the descriptive and explanatory account of the P-functions to be the initial task of general psychology. This account would refer the functions to somatic conditions on the one hand, and to the functional products upon the other."

It is apparent, I think, that in this part of his development, where the 'products' and 'conditions' and the 'functions' and 'agents' interplay, Bentley is still allowing remnants of an older, conventionally accepted, mechanistic space-form to have auxiliary influence upon his procedure. This influence is alien to his own broader functional construction. In a situation like this, where a scientist is found in full course of improving his technique by deliberately repeated efforts,¹⁴ it is reasonable to predict that he will

14. I find, however, no significant advance in Bentley's analysis of his distinction between 'function' and 'product' in his latest book, *The New Field of Psychology: the Psychological Functions and Their Government*, 1934. He describes the "languages, histories, arts, beliefs, and rules of conduct" as "products which issue from the psychological functions" (p. vi), and regards them as analogous with "gastric juice" as a "product of digestion" or with "rock strata and drift" as "products of the processes of upheaval and transportation" (p. vii). His attention is still primarily upon "the monstrous 'mind-body problem'" and upon his effort to get rid of it more completely than in his earlier work.

take fully into account all aspects of his materials, including the isolational as well as the apprehensional, before he is done.

However different Dewey and Bentley may be as regards issues not germane to our present examination, their similarities with respect to many of the problems that do concern us are so manifest that there is no need for recapitulation. Their great similarity is the extent to which they carry their efforts towards the reorganization of the mind-language, along linguistic-functional-scientific lines. Carry this procedure forward, and the lines of development must fall together. The linguistic characteristic which we call coherence—and this considered 'socially' rather than 'logically'—will take care of the outcome.

XII. THE APPREHENSIONAL SPACE- SEGMENT: KANTOR

Thus far in our study we have found no single psychology that undertakes direct and determined analysis of the situations in that sector of the mind-language problem which we have called 'apprehensionality.' These situations have a range from 'sensing' through 'perceiving' to 'thinking' and 'idealizing.' The requirement for psychology here is analysis and clarification in unrelenting pursuit until that which is characteristically 'psychological' in the facts stands plain and clear. We have found minor attempts at organization or reorganization, but no steadily maintained effort. The 'situations' as they come continue to be accepted as the 'facts' in renderings which, so far as this particular sector of implication is concerned, continue to be those of the old mind-language. What was once 'faculty' of 'mind' now appears variously as distillate or secretion of body, as a form of bodily movement, or as 'act' or 'activity' or 'pattern' of 'person' or of 'total' or 'psychological' organism.

KANTOR, so far as I am aware, stands unique for his direct attack upon the problems of observation and construction in this sector. His status, as appraised by the aid of our present tools of linguistic analysis, can be definitely set down as follows:

In all issues that concern 'mind-body,' his standpoint is unified and naturalistic, as fully and clearly as that of any mechanistic or physiological psychologist; indeed, his elaboration and justification of his standpoint is exceptionally firm and coherent.

With respect to the 'organism-environment' problems as they arise out of the biological sciences, he is enabled to avoid those wider generalizations which give 'environment' in many constructions an almost mystic character, and to work defi-

nately in the background that is observably before him.

In the organism-object sector, that of apprehensionality, he makes a long step forward in the application of that very naturalistic treatment which others have been content to confine to the issues of mind-body. He studies organism and object just as he finds them in their joint appearance in the 'situation' and in their joint happening as 'event,' and without survival of 'mentalist' emphasis upon the organism, separately taken, as the locus of 'what happens.'

Towards the man-man problems, those of isolationality, he makes, however, little change in the old forms of approach. He connects man with man under the same construction of stimulus-response which he uses for the connection of man with object. Each 'man' in his construction is just one more 'object' to other men; specialization in the detail of study is needed, but no transformation in type of interaction is found.

His space-type in his earlier presentation was predominantly mechanistic and successional;¹ in his latest development, however, he emphasizes more strongly the durational extensions of psychological phenomena and shows, therefore, many characteristics of what we have called an action-space.² The segmentation of space that he employs within the space-type is much more firmly defined. It covers always organism and object *together*, and it is just this segmentation which he uses when he establishes his well-known "unit" or "segment of behavior."³ We may call it here the 'apprehensional space-segment.' It is thoroughly distinctive of his work. Others have said that such constructions should be attempted, or have assumed a similar situation as the background of inquiry; Kantor alone has made the direct construction.

1. *Principles of Psychology*, I, 1924; II, 1926. *An Outline of Social Psychology*, 1929. See also his essay "Philosophic Implications of Organismic Psychology" in *Essays in Philosophy*, edited by Smith and Wright, 1929.

2. *A Survey of the Science of Psychology*, 1933.

3. *Principles*, I, p. 36; *Survey*, pp. 21 ff.

One must not infer from this characterization that Kantor himself deliberately postulates either the space-frame within which psychological inquiry should be carried on or the specialized space-segment which should be used. In only a few passages do we find him so much as mentioning the spatial background.⁴ He concentrates his attention upon the facts of his psychological observation, and upon their proper presentation and organization. He secures thus what is in effect a space-type and a specialized segmentation—a construction which, under the linguistic hypotheses we are using, can be analyzed and appraised in this form.

Kantor originally styled his system 'organismic'; he has also called it 'objective,' and with sounder right than many others have when they use the word. The first name was quickly adopted by others for a different procedure, and the second is widely overworked. He is therefore now describing his technical procedure as the "interactional viewpoint" in psychology. In all cases like this, terminology is difficult to establish, since functional names are in continual danger of degradation to substantive applications. We have found Dewey driven to write 'trans-action' and 'experiencing.' In the present case Kantor's word should be stressed as 'interactional.' If it were read as 'interactional,' the stress would seem to be upon the end-points of behaviors, which is exactly what he does not intend.

In this 'interactional' approach, Kantor makes use of the language of stimulus and response. He distinguishes his

4. For example, in *Survey*, p. 41, he speaks of "the way an organism distributes itself with reference to the space in which both it and its interacting objects are located"; and on page 386 he remarks that "it is questionable whether the mind—that is, psychological phenomena or behavior—is something that requires a seat or locus within the organism." It is worth noting that while we have assigned to Kantor the use of a space-type less elastic and less advanced than that which we believe we can identify in the work of Dewey and M. Bentley, we find him actually making greater progress than they in dealing with the very presentations to which they give prominence, such, namely, as 'trans-action,' 'experiencing,' and 'operative modes.'

technique from that of others by using the double-pointed arrow to connect "S" with "R." This is no mere formality, but the positive characteristic of his whole attack. "S" and "R" are alike activity, one as much as the other. Stimulus *never* enters his system in the form of a sharp isolation or abstraction of some form of physical energy. Response *never* occurs as a biological product or by-product caused or excited by a train of physical energy. The 'object'—and that means the 'thing' with which the organism makes psychological contact—enters the study and is found in the space-frame Kantor uses, with precisely the same definiteness as the organism. If the organism shows activity—function—in 'perceiving' the object, the object in its turn shows activity, or function, to just the same extent in 'being perceived'—positive psychological activity, not psychological passivity—notwithstanding all the implications of the old mind-language and all the set-up of first person and third person and of active and passive verbs in grammar.

The 'things,' namely, organism and object, enter this construction as 'existing' in the same preliminary common-sense way in which they enter into any natural science. What psychology studies is their 'interaction'—not their physical interaction, and not their physiological interaction, but positively and definitely their psychological interaction; it is exactly here that the differentiation of the psychological from the physical and the physiological can be secured.⁵ The psychological interaction requires both organism and object, and it requires both of these in action such that without their mutual participation, the expressly psychological would not appear.

In his earlier development Kantor stressed response-function and stimulus-function as correlates, the one inhering in the organism and the other in the object, with 'organism' and 'object' allotted each its realistic position in a con-

5. See his objective characterization of the 'psychological interactions' (*ibid.*, p. 6) under six tests as 'differential,' 'integrative,' 'variable,' 'modifiable,' 'delayable,' and 'inhibitive.'

struction of Newtonian space and geological time that came perilously close to rigidity. Such a treatment seemed to make the 'functions' separable from the 'things' in which they inhere, in a background comparable much more to the abstracted mechanics of the older physics than to the newer physics of wave and electron, and hence was open to several lines of sharp criticism. He still uses the term 'function' in his present development, but now as a clarified expression of the joint activity of organism and object. The two termini, 'S' and 'R,' are discriminable in analysis rather than by objective reference to actualities of fact furnished from non-psychological viewpoints. His use of 'units' of behavior is likewise fully analytic, and hence free from the older type of criticism.

Let us appraise the significance of Kantor's approach by removing ourselves, for the purpose of its inspection, as far as we can from the present-day psychological turmoil. Suppose that a Man from Mars should come along—which is to say, by definition, some one who had never been steeped in the terminological conventions of earthly language, or who had freed himself from their worst evils. Let him meet a behaviorist and ask him about the technical procedures of behaviorism.

The behaviorist would say: "In the old days, and alas, even today among our surviving fossilists, men imagined 'minds' in their bodies. Now we behaviorists can exhibit 'behaving bodies,' so that we can do our work in 'systems of movements' just like the physical sciences."

The stranger would ask: "These men-movements are, then, all in a pattern with the rest of the movements in the world"?

"Exactly."

The inquirer would pause in doubt. "Why is it, then," he would ask, "that you concentrate your attention so strongly on this behaving man all by himself, and usually upon separate fragments of the movements of this man, when you proceed to describe all these psychological happenings"?

"Because that is what we are studying; that is the way to do it"; and possibly, after a surge of self-understanding, "because that is the way it has always been done."

"That is strange," the Man from Mars would say. "When I examined your earthly astronomy, I did not find the astronomers cutting out special sections of the movement of the sun and concentrating upon them as solar behavior. They had their sun and planets all in a system, which they studied in one great scheme of inquiry."

If our inquirer then wandered further and came across Kantor's construction, he might return to the behaviorist and say: "You started by telling me that organisms and non-organic things were alike natural. Here, now, I have found a system that treats them that way. Where it finds 'seeing' or 'knowing' or 'remembering,' it takes both man and object into account in the common activity. Is not that just what you ought to be doing if they are both natural in the world"?

The behaviorist's answer I shall not attempt to guess. Too many evanescent sparks would probably fly. But the final remark which the Man from Mars would make is clear enough: "You seem to me pretty sentimental over your little fragments of 'man'; I think I prefer the tough-minded Kantor."

Despite a somewhat cumbersome construction and expression, Kantor in his *Principles* showed his ability to cover thoroughly the whole field of psychology from his point of approach. In his new work, the *Survey*, he attains lucidity as well as completeness and shows a technique well adapted to expansion of observation, discrimination, and terminological precision.⁶ He can discuss in great detail intricate psychological problems that run far beyond the possibilities of the behaviorist technique. He is free from

6. See, for one illustration among many, his catalog of personality equipment, *ibid.*, pp. 121-6. Here there is maximum freedom for the range of observation and no feeling of need to seek refuge in some

dependence upon terms that eventually prove to be nothing more than mechanistic changelings for the implications of the old mind-language.

The 'environment' which always makes so much trouble, and which we found becoming explosive in the case of Madison Bentley, raises no issue at all for Kantor's development, since the specific psychological expansion of the environmental situation which he introduces is comparable to the legitimate similar expansions of other branches of science. Such a presentation as 'the environment,' so necessary to the physiological psychologist as a general dominating principle, does not enter into Kantor's work at all. That which enters is always the specific case of organism *and* object in functional activity. Cleavages may be made in descriptions, but they never show themselves as basic issues.

The criticism to be directed against Kantor's construction is that it is not carried far enough to cover all of the pertinent problems of inquiry. It undertakes direct independent inspection and analysis of situations of man and object, thereby securing a new functional understanding, but it makes no similar direct investigation of the situations of man and man. Here it simply assumes that the construction form it has secured for organism-object can be applied directly to man-man by merely substituting a 'man' in place of an 'object.' Differences appear, of course, but they are treated as incidental and not as bringing about any change in the form of construction itself. The apprehensionality problem as conveyed in the old mind-language is analyzed; the isolationality problem is not. Weiss, who in many respects was close to Kantor in his objectives, never attained to Kantor's apprehensional construction, but he did lay the foundation, in his own mechanistic space-frame,

all-embracing verbalism. In contrast with Kantor's treatment of 'habit,' compare, for example, what Dunlap does when he comes to the conclusion that "Habits in their totality make up the character of the individual; that is, they *are* the individual, as he appears to other people." Dunlap, *Habits, Their Making and Unmaking*, 1932, p. 3.

for such an extension of Kantor's work. His 'biosocial' requires just this.⁷

The present situation in Kantor's work is well brought out in his use of the 'reactional biography' (in chapters III-VIII of his *Survey*) as the basic presentation with respect to which psychology as 'process' and as 'activity' must be studied. This treatment is akin to Dewey's 'life-careers' and to similar features in the work of Weiss and of Madison Bentley. Kantor does not stop here: his next thirteen chapters concern themselves wholly with those very 'operative modes' upon which Bentley wishes he could concentrate all his attention. But what stands out here in prominence is that Kantor's orientation for the study of all such 'processes' is definitely in terms of the reactional biographies. There is no objection to this, and especially none when the book under examination is an academic course in psychology. Nevertheless, the whole psychological presentation becomes dominated by what we may call gross or comprehensive description of the phenomena of a particular 'locus,' in this case the behaviors of the separated human organism.⁸ If the psychological process should prove to need a wider orientation, no provision is yet made for it.

This possibility becomes, to my mind, most clearly apparent in Kantor's dealings with 'linguistic interactions.' In this part of his work his basic stimulus-response function will not directly and fully serve his purpose. He elaborates it in the form of a 'bistimulational adjustment,' with the 'person spoken to' entering in the form of an 'auxiliary

7. Kantor's construction of the 'social' in his two earlier works is, like his older construction of 'function,' subject to sharp criticism. The *Survey* avoids the greater part of these difficulties, but even here we find his discrimination of 'universal,' 'cultural,' and 'individual' carried over from the earlier work, still falling short of linguistic coherence. For all practical purposes he now equates 'societal' with 'adult' (p. 105) and lets it go at that. Here is another point of correspondence between Kantor and Weiss.

8. Note the contrast, to be used later on in chapter XXVIII, between gross descriptions and functionally analytic descriptions in this field.

9. *Survey*, chapter XIX.

stimulus.' He can make undoubted progress in this way, and he throws up a range of interesting new inquiries which he is prepared to develop in the form of a psychology of language. The question nevertheless remains whether this indirect interpretation will answer all needs; or whether, beyond this, it may not be possible to secure direct observation and report of the communicative situations among men—much as he, in his own primary field, has secured direct observation and report on the situations of organism-object.

Since the text of this book was placed in type, the scattered essays of Kurt Lewin have been published in America under the title *A Dynamic Theory of Personality*.¹⁰ In them one finds report upon a wealth of experimentation undertaken through a manner of approach which, spatially analyzed on the lines of our preceding inquiry, is essentially that of Kantor. In many instances Lewin and his collaborators have secured results vivid in their interest, and thus strikingly in contrast with the arid procedures all too prevalent of late in the psychological laboratories.

Lewin orients his work by drawing a contrast between 'Aristotelian' and 'Galileian' attitudes towards scientific exploration.¹¹ This is a contrast which stops materially short of the opposition between 'Aristotelian' and 'Scientific' which

10. Page citations in the text are from this source. The more important of these essays were prepared in 1933; none is earlier than 1931, except the chapter "On the Structure of the Mind," which is an excerpt from the book *Vorsatz, Wille und Bedürfnis*, 1926. Interesting is Lewin's progress, following upon the preparatory work of the Gestalt psychologists, towards liquefying the viscous German terminology and phraseology, within which the philosophy and psychology of his nation have so long been encysted. The translators of his book, it may be remarked, seem wholly untouched by this characteristic, being mainly interested in the restoration of a certain respectability to the word 'person,' in the hope, even, that the word 'soul' may be reintroduced into English psychological expression.

11. Compare for the Aristotelian-Galileian contrast, the preface to Kantor's *Principles of Psychology*, vol. I, 1924, p. xvi.

we have used in chapter IV, and to which we shall return again in chapter XVIII, but it results in a devastating criticism of most of the current psychology. Compactly put, the contrast is this: The Aristotelian 'vector' was "completely determined in advance by the nature of the object concerned," while the Galileian vector "depends upon the mutual relations of several physical facts" (p. 28). Working in the psychological field, Lewin deals, not with physical forces, but with psychical or psychological; he deals with them in their "total situations," where there is as much of the psychological to be found on the environmental side as on the personal side. This, manifestly, is almost 'pure Kantor.' The vectors in psychological study should be Galileian, derived "not from single isolated objects, but from the mutual relations of the factors in the concrete whole situation, that is, essentially from the momentary condition of the individual and the structure of the psychological situation" (p. 41). "It must always be kept in mind that we have to do with forces in a *psychical* field and not in the physical environment" (p. 46). "Objects which . . . form the goal of the process are to be regarded primarily as objects from which a force, steering the process, goes out" (p. 50). The forces "remain without effect or simply do not arise when no psychical energies are present" (p. 51). The causal relation between self and environment appears as "circular" ("zirkuläre Rückkoppelung") (p. 111). His dynamic theory of personality distinguishes phases of structure, dynamic material, and content. "With the same structure, the dynamic material of the systems may be different." Again, "with the same structure and same material, the content may be different" (pp. 186-7).

For his working tools Lewin makes use of mathematical 'topology' and of 'fields of force.' Mathematics he insists on because it is a language less equivocal than others, "objective," "unspeculative," and expressing "only the structural order of things and events" (p. vi). Topology he finds the most useful mathematics, enabling him to cover "the mode of connections of different regions, the presence of dynamic

barriers, etc." By 'fields of force' he understands the "direction and strength of the forces at the various points of the field" (p. 257). The usefulness of these devices is plain when applied, as Lewin himself applies them, cautiously as aids in organizing his materials.¹² They become dangerous only when it is assumed that their mathematical origin gives them authority in their own right, whereby they serve as substitutes for independent psychological analysis; some of Lewin's followers are already showing signs of such an attitude. The topology that is needed is a true psychological topology, and not merely an over-lay of mathematical patterns. The fields of force that will be valuable are only those in which thorough psychological analysis is made of what the word 'force' may serve to indicate. Indeed, even in physics itself, the fields of force are but pictures; and pictures, for that matter, which physicists at the present moment are most earnestly wishing they could resolve into more dependable presentations.

12. Frequent indications are found that the newer mathematics will have useful application to psychological and social fields. Compare the situation brought out in our examination of Hunter's work (chap. VII), Dewey's use of the 'vector property' (chap. XI), and my essay, "Sociology and Mathematics," *The Sociological Review*, October, 1931, p. 165, *et al.*

XIII. RECAPITULATION

The outcome of our examination of sample systems of psychology with respect to space-types and segmentations may be displayed as follows:

<i>Segmentations</i>	<i>Spatial Types</i>		
	1 <i>Mechanistic</i> (Successional)	2 <i>Actional</i> (Implicitly Durational)	3 <i>Linguistic- Functional</i>
Body-Segment	Dashiell	Woodworth	Dewey's trend
Gross-Movement	Washburn	Dunlap	M. Bentley's trend
Segment	Watson	_____	_____
The Sectioned	Weiss	_____	_____
Environment	Hunter	_____	_____
The Apprehensional	Kantor's base	Kantor's trend	
Space-Segment	(1924)	(1933)	_____
The Non-isolational*	_____	_____	_____
Space-Segment			

* In default of illustrations, this possibility of segmentation is given indirect instead of positive naming, the word 'isolational' being taken in the restricted use assigned it in chapter V for one of the sectors of the mind-language problem. Whether or not construction in this form would be technically 'psychological' is a question that does not concern us at this point.

In inspecting this tabulation, remember that psychological systems are complex phenomena of inquiry, and that our attention here is confined to certain of their most distinctive characteristics or 'traits'; that these traits are seldom firmly proclaimed, but more often require close observation and analysis to be identified; that the entries of men's names in the table is not for the purpose of passing judgment on the 'men,' but rather to label most conveniently the 'traits' under consideration; and that our examination is to be taken throughout as experimental and tentative, subject always to emendation in further study. It should likewise be recalled that we have placed a definite limitation upon

the range of our examination where wider philosophical viewpoints are concerned, inasmuch as we have stricken off the rolls all those psychologies that base themselves 'realistically' in Aristotelian reference upon central terms of the mind-language.¹

For the further appraisal of the tabulation, it is also to be noted: (a) that the psychologies listed in columns 1 and 2 proceed under the hope and expectation of an ultimate determination of scientific 'fact' upon an Aristotelian linguistic base; (b) that the psychologies listed in column 3 differentiate themselves (in my best present judgment) by a notable trend towards linguistic-functional-scientific organization, both for observation and for the spatial-temporal construction-form of observation; (c) that discriminations of space-type (and of space-segmentation as well) as they appear in our technique are themselves linguistic-functional procedures, even where the psychologists who use them regard them as potential fixations of 'fact'; and (d) that the trend towards explicit linguistic-functional organization is presented here as akin in its general attitude (though of course not in any technical competence) to the organization which physics secures for itself by the use of its mathematical spaces.

The tabulation shows us two characteristic lines in which advance has been made in the effort to secure a scientific form of construction for psychology. These lines run at right angles from a base point, that of the mechanistic body-segment, labelled by the word 'Dashiell.' In column 1, we find experiments with widened segmentations in a mechanistic space. Horizontally across the table we find transformations of space-type for the organic, human segment.

The first line of advance, that in the mechanistic space-type, terminates, as the case now stands, with Kantor's apprehensional space-segment in its earlier presentation;

1. See Group A in the preliminary taxonomic classification in chapter III. Ogden is also omitted from the summary, since his work was introduced primarily to throw into better relief the two contrasted types of linguistic procedure.

from this point Kantor's trend has been to transform his segment into an actional setting.

The second line of advance terminates with both Dewey and M. Bentley introducing constructional suggestions which range far beyond the narrow segmentations of their preferred phenomena of direct observation.

The intermediate constructions on both lines may be regarded as tentative and transitory. Those exhibiting the body-segment in an action-space—the clotted activities, the substantivized patterns and integrations, the individuals 'as individual'—are manifestly defective in analysis. Those employing gross-movements or sectioned environments are in effect left behind as soon as the work of their proponents is well under way.

For the exhibit as a whole, two comments are indicated. It is reasonable to anticipate further experimental constructions at an early date to fill up the tabular positions now shown as vacant. Given the experiences of the more highly advanced sciences as our guide, we may readily estimate the characteristics of construction that will dominate in the end. These characteristics will be efficiency and flexibility; the 'best' construction will be the one which best allows for the correlated use of other space-types and segmentations as subsidiary frames for specialized problems of inquiry.

If we inspect the array of psychological constructions with respect to the four sectors of difficulty in the old mind-language: namely, mind-body, organism-object, man-man, and organism-environment, we find the present status to be as follows.

The mind-body issue has lost all importance; it retains no critical significance for scientific observation or method. Washburn still makes reservation for 'epiphenomena' and Woodworth still hankers after a 'psychic plus,' but neither presentation has sufficient vitality to interest the investigator. Of course, we find many varieties of verbal technique still actively stressed for dealing with this issue; here and there a psychologist seems to think his own has

super-excellence, but such an attitude merely hampers his own freedom and range of work. The differences are those of detail in formulation, and the 'simple and profitable thing for us to do is to take postulatory unification for granted and cease all further worry.

For the problems of organism-object, development has only just begun. We find but a single system, that of Kantor, making direct attack upon the issues of construction in this sector. Most of the others are still content to let 'body,' 'activity,' 'psychological organism,' or this or that other substitute 'do' what the segregated 'mind' was formerly supposed to do, and in much the same way.

When we turn to the problems of man-man, definite construction can hardly be said even to have started. Nevertheless we find these problems pressing upon attention from many directions. Huge masses of materials are piled up, ready to break over the dam of 'isolationality' and inundate the field; in every book and essay their effect is seen. Positively, we have Weiss' 'biosocial' and Hunter's 'language-response hypothesis' and, more comprehensively, the general forms of postulation set up by Dewey.² Negatively, we have Madison Bentley's display of 'products,' which must at the same time be treated as 'conditions,' and his suggestion for a replacement of 'conscious' deficits. In Kantor's program of inquiry the cultural phenomena of language await developed treatment in his specialized apprehensional form. The behaviorists would be hard-pressed to define any of their movement phenomena if they were not permitted to read into them implicitly the 'social' specifications; indeed, we may well believe that at the very moment when the body-segment was abandoned by the first behaviorists in favor

2. One may well examine in this respect the important contribution of Kornilov to *Psychologies of 1930*. So much pertinent material is presented by him and so much construction made, that it could well have been given extended treatment here. However, radical postulatory defects of types not pertinent to our present specialized investigation have led to its omission.

of the gross-movement-segment, foundation was laid for a thorough revision of all our knowledge in this respect.

Relative to the organism-environment sector, where implications derived from the mind-language mingle with professedly physical formulations, we have found in Dewey a formal hypothesis covering its vital importance to psychological research, and in Kantor, a definite use of it in his construction. So deeply is it involved with the other sectors of inquiry that solutions cannot come until it is taken fully into account. It leads in the end to the widest problem of scientific organization, that of the status of psychological techniques in connection with the physical and biological techniques of research.

XIV. 'ISOLATIONALITY': LANGUAGE AND FACT

The word 'isolationality,' clumsy and opportunist though it is, has had definite service to perform throughout the preceding inquiry. It has named and held before our attention one of the most pregnant characteristics of the old mind-language: namely, that characteristic wherein each human being as an 'individual' is inspected in sharp severance from every other. To the 'realities' involved, whether by way of assertion, denial, or qualification, we have given no attention, but have employed our word 'isolationality' solely as an aid in appraising the issues of coherence in the language of psychological construction, where the characteristics that are thus labeled come sharply to view.

Whether we put our stress upon the 'language' or upon the 'fact,' we deal here with a region of the behaviors of men in which 'convention' shows itself with extreme strength. The human being of our practical acquaintance is emphatic in his assertion of his *personal* existence, his existence as a *separate* person; so, likewise, is the psychologist, with hardly an exception. Whether he formulates this *existence* spiritually, mentally, actionally, energetically, or mechanistically, the difference is one of detail in statement, not of factual stress. Caliban in face of Setebos was never more intensely personal. The obstacles, then, which must be overcome merely to secure the preliminary right to make a linguistic appraisal of the situation are often enormous. For that reason it is desirable to sketch briefly in a separate chapter the status of fact and language with respect to this isolationality.

Let us first present the historical setting of the existing conventional attitude of the Occident. The 'soul' is the historic predecessor of 'mind' in our western scientific development. For a matter of at least a thousand years, this 'soul' had such universal acceptance that differentiations

of opinion concerned almost entirely its attributes, without hesitation over its actuality. Detached from 'nature' and from other 'souls,' each 'soul' stood in isolation over against Deity. Mysticism in plenty appeared, and of many kinds, but they were of the more remote philosophical heritage and never embedded themselves deeply in our western practical living.

The 'mind,' as successor to 'soul' and regarded as immaterial within its material body, has likewise stood alone, apart from other 'minds,' however its 'body' might be allowed organization with other bodies in the material world. The 'person,' more recent representative of 'mind,' has its deep involvement with conditions called 'social,' but is nevertheless presented for study as something by itself, not precisely 'matter' nor yet 'mind,' but in some way certainly present, and certainly maintained. Finally we have the 'body,' neural or muscular, which, in modern physiological psychology, is often seen parading, in terms of the flesh, all the qualities, powers, and performances of the older 'mind.'

This emphatic stressing of the *individual* man as a separate phenomenon for himself is what we have called 'isolationality.' It is this stress, no matter to what physical locus we find it assigned, that we have described as a survival of the constructions and implications of the mind-language. It is this which—to single out two cases of exceptionally easy labelling—yields the 'neo-mentalist' psychology of Woodworth and the 'mentaloid' psychology of Dashiell. It flatly prescribes the acceptance of the 'person' as if sharply 'known' to be 'fact' in definite form prior to exploration and analysis. And it forms one of the great marks of distinction between existing psychological investigation and that of the better developed sciences: for, where the riper sciences allow their transformations and organizations of data to proceed with maximum freedom, even though earlier isolations are thereby caused to fade out of the picture, the psychologies, in the main, declare their basic isolations in advance of their labors.

Let us now examine the consistencies of expression, the linguistic behavioral coherence, of the theorist, psychologist or any other, who establishes his work solidly upon the linguistic convention of factual isolationality. When we express our doubt of the inevitability of his position and suggest a transfer to the region of clarified hypothesis, he will turn upon us and say: "Why all the pother? This separateness of personality, this individuality, is 'fact.' Everyone knows it. You know it. By examining it in terms of linguistic coherence, you do not dodge this 'fact,' however you may pretend to. The language merely states the 'fact'; what is more, it states it correctly, and we must rest there. This is the starting-point from which all psychological research must be undertaken, and from which all psychological science must be developed."

We might retort: "You seem to us mistaken in your conception of science. The scientific approach is all that concerns us here. Your views and beliefs in other respects than the scientific are not of the slightest concern to us, and we are doing nothing whatever to interfere with them. Scientific procedure, as it is before us in its great successes, neither starts with absolutely certain fact nor aims at absolute certainty; above all, it never tries to establish its authority by dictum. Its aim is the fullest and richest development of knowledge that it can secure, under ever-growing observational and experimental competence and with ever more adequate expression."

However, we may pass over any such generalized reply and proceed instead to examine just what it is that our opponent demands of us when he forces the issue of 'language' and 'fact' upon us in his chosen form, and when he makes his assertions squarely from the point of view of 'fact.'

The first difficulty that arises for him is this: The only 'fact' that he can place before us is 'fact as he is aware of it.' This he may expand into 'fact as others also can be aware of it or can come to know it,' and still further, into 'fact as everyone must be aware of it.' He may not

like these simplifications of expressions which we assign him, but they are substantially what he has to offer. Around them we find, of course, a huge literature of philosophical and philosophic-psychological discussion; however, this discussion has never attained any abiding results in the way of organized, working knowledge. We may therefore pass it by cavalierly and, instead, consider directly, as they come, the situations that we thus set impressionistically before us.

The 'fact as our opponent is aware of it' does not enter the scientific situation in that particular form. He tells us about it, but his very word 'aware' has complexly linguistic implications. It is the 'fact' as 'others' or as 'everyone' must be aware of it upon which he relies. Here we have something which involves, or is involved in, the communications between men. It is communicational both in its 'asserting' and in its 'what of assertion.' That to which he appeals has the form of 'fact as communicated in language, and as accepted by universal agreement through language.' This seems to be the proper preliminary empirical description of the situation; the 'facts' and the 'language' are in some deep functional interconnection.

We may assume that our opponent will recognize this situation. If he does not, he is apparently out of all contact with his fellow men, and it is difficult to see how anything further can happen with respect to our present issue. We shall not, however, assume that the mere presentation of such a situation does anything whatever to overthrow our opponent's right to insistence on his basic 'personal' fact. The issue, as we have raised it in this specific case, lies between the two great types of linguistic construction set forth in chapter IV and to be more fully examined in chapter XVIII—on the one side, the Aristotelian indentification of particular 'word' with direct 'fact'; on the other, the full postulation of scientific-functional organization of language and fact. Our opponent is employing the former construction, while we here are employing, by hy-

pothesis and for the purpose of appraising psychology as science, the latter.

What we now have to observe is the position in which a psychologist finds himself when he simultaneously asserts 'isolationality' as 'fact' and establishes 'fact' through Aristotelian identification in language. However the absolutists have attempted to glorify it, the Aristotelian identification rests in a specific form of psychology which uses either directly or indirectly some kind of 'mental faculty' to make the identification. With the 'identification' thus made, the asserted 'fact' is then turned back upon itself to establish the 'necessary' basis for a psychology.

Such a procedure is neither frank nor thorough; nor is it stable. It is certain to lead in the course of time to a more open and careful attention to linguistic coherence. It therefore is bound to lead, if not to some better and more powerful alternative, then to that very postulation of linguistic organization for science which we are here using and under which, in the special case being considered, we have brought out 'isolationality' as an aspect of the mind-language, as a problem for inquiry, and not as a certainly reliable initial 'fact.'

In this background we may proceed to a closer statement of our immediate problem. We may disregard presentations of 'isolationality' in terms of 'soul' or 'mind' as antiquated and worthless for present scientific purposes, and those in terms of 'human body' or 'animal organism' as crassly imitative presumption. In place of these we have to consider presentations in terms of 'person' or 'individual' or 'activity.' Such presentations we accept empirically—that is to say, tentatively—as 'facts,' and always with direct reference to their biologically individuated locus. Empirically we have very much to justify constructions reminiscent of 'isolationality,' though at the same time we have much before us that tends to disintegrate such isolationality. It is not necessary to set forth illustration; the mere men-

tion of the word 'criminology' exhibits endless confusions and uncertainties.

Our problem is strictly that of attaining the most efficient construction for a scientific psychology. In our preceding investigations we have found solely psychologies which orient themselves to the individual person taken in isolationality, with such isolationality as the basic fact of construction. Of these, as they stand, we may say that almost without exception they equate the field of psychology with that of the isolationality of the individual. We may say further that it is exactly here that the most flagrant incoherences of construction appear.

Facing this situation, we readily admit that psychology receives its materials primarily in forms it calls 'individual.' For the immediate purposes of the argument we may even admit that in these forms it finds its 'most certain fact.' But when we ask it to talk to us coherently about this 'individual,' with special attention to the characteristics of 'isolationality,' psychology defaults completely. We then proceed to argue that the more certain the 'fact' or the 'situation of fact' that is before science, the more eager is science to gain increased knowledge about it. Science does not hesitate if its progress in knowledge involves this or that minor modification of its original statements about its 'most certain fact'; nor does it hesitate if such minor modifications accumulate until in time they have brought about a complete transformation of all of the original statements. Some individual scientist may hang back upon one occasion or another, but the great body of investigators marches unceasingly onwards. In such transformations science finds that it has not lost its 'fact,' but instead has advanced ever further towards understanding. The history of the word 'matter' in physics is sufficiently typical to cover all cases. The 'matter' of today is radically transformed from the 'matter' of even a generation ago, and the transformation is the outcome of accumulating minor modifications across many generations and centuries.

One phase in the distinctive presentation of 'individual' is indeed beyond dispute, so far as any of our preceding

analyses have shown. It is that phase in which the ‘individual’ reference is made to man as an animal organism. But here certain definite observations may be made.

The human organism enters psychology as a separate individual organism with just such values of ‘separation’ as it secures under the physical and biological (including phylogenetic) linguistic constructions in which it is presented.

These values of ‘separation’ not only must be taken as they are given, but they must be kept as they are given.

To take the severance of the individual organism as it is biologically given, and to make it the foundation for an entirely different severance in different types of phenomenal activity which come up for inquiry, is not a safe and assured foundation, but an adventure.

Adventure under cautious hypothesis is always proper, always necessary—adventure, that is to say, in which just as careful attention is directed to the form of construction that is employed, as to the ‘facts’ with which that form is filled.

But adventure in the belief that a fixed and certain basis has been guessed at for all construction, and with eyes closed to the nature of the hypotheses that are involved, is certain precursor of ruin.

In our examination, in the next chapter, of Titchener’s attempt in his latest years to establish the characteristics of psychology as science, we shall show some of the obscurities of his position, and shall trace them to the survival of a form of ‘isolationality’ of the old mind-language as oriented by him to the ‘individual’ animal organism.

XV. PROLEGOMENA TO A PSYCHOLOGY: TITCHENER

Titchener wrote his prolegomena to psychology at the end of his 'life-career' as a psychologist. His unfinished book, *Systematic Psychology: Prolegomena*, was posthumously published in 1929.¹ He had spent his life searching for psychological 'facts' and directing others in the search for them, and he now wished to establish such 'facts' as fully naturalized citizens of the realm of science, inhabiting a province of their own.

To attain success he knew that he must first survey that realm and make definite report upon its characteristics. He came here to firm statement. All science, he held, is description; description proceeds in language;² that which is described by science is the 'existential'—the 'existential substrate' of 'experience'—the 'bare what' of things as reported by disinterested and impersonal observation. Disinterestedness and impersonality in observation, reverence for facts, 'observance' towards fact: these are what characterize the 'scientific.' If psychology is a science, if psychological facts are scientific facts, then the psychological facts, like all others, must be 'existential.'

In attacking his problem of establishing the place of psychology within science—of the 'psychological' facts

1. Page citations in the text are from this work.

2. Compare his remark cited at the beginning of chapter II, that "science is a particular kind of writing or talking."

3. Psychologists in their discussions of this book are inclined to regard the word 'existential' as mere camouflage for 'structural' (thus Woodworth, *Contemporary Schools of Philosophy*). For this they have much justification from the 'school' point of view, since Titchener still occupies himself largely with the defects of the rival 'functionalists' and 'intentionalists.' Our appraisal of the situation runs, however, much wider, and we must note that Titchener himself expressly rejected the term 'structural,' calling it 'obsolete' (p. 178).

among the 'scientific' or 'existential' facts—Titchener's procedure is akin to that which has been employed in chapters VII to XII of this book. He appraises as impartially as he can the linguistically presented materials of various psychological constructions. He seeks to establish the extent of the coherences which they show, and the limitations upon coherence which the very manners of their construction involve. His technical tools are 'points of view' and 'subject-matters,' which, within his procedure, perform the type of service that examination of spatial and temporal frames has performed for us.

One radical difference exists, however, between his program of attack and our own. His procedure of linguistic analysis is employed functionally *within* the scientific field alone, and he does not permit it to extend to similar functional use across the full range of knowledge. When he identifies the 'scientific' with the 'existential,' he does so by setting 'existential experience' over against 'experience of Value,' and by making Existence and Value opposed divisions within Experience as a whole. The inquiries of science he confines to the 'existential.' All other inquiries: namely, the disciplines of Value, the integration of these disciplines, and the final integration of Existence and Value, are made the task of 'philosophy' (p. 77). These three terms, Experience, Existence, and Value, retain for him a basic factual significance and are not themselves subjected to full linguistic exploration; they originate in the early regions of 'common sense' and are not brought within the ranges of 'scientific fact.' Thus holding them apart from all the 'language' which he analyzes within the field of the 'existential,' he is, in effect, giving to these three terms

4. See the discussion in chapters IV and V above. The 'philosophic' for Titchener has substantially the meaning of all that which is *not*-existential; all that which can *not* be handled scientifically. Under Titchener's own procedure, this would have to mean that which can *not* be resolved by procedures of linguistic-scientific technique. Putting the distinction in this way, does it not offer certain intimations of the absurd?

values of the type we have called 'Aristotelian' as opposed to 'scientific.'

An examination of Titchener's presentation on the psychological side would run wide; on the philosophical side, still wider. We shall here confine ourselves bluntly and in a matter-of-fact manner to the linguistic situation. We have to inquire into the degree of coherence which Titchener himself secures for his own construction. We have to ask whether linguistic materials excluded from the region of Value do not return stealthily, and distort his development. Can his region of Value be held sharply apart, linguistically and scientifically, from that of Existence? If a linguistic analysis is employed in the existential field, and if all the disciplines of Value are themselves before us in 'language,' can that linguistic analysis be restrained from expanding across these latter in joint organization? Finally, is it not the survival of the implications of 'isolationality' in the mind-language, itself badly in need of linguistic analysis, which offers the critical test for Titchener's development?

First let us secure a clear view of science as Titchener sees it, and of 'scientific fact' as he sees science developing it. Here he offers us no arbitrary or limited definition; instead, he makes fine use of observation, and of observance and description, in his own rendering of those terms.⁵ He finds early science dealing with the "concrete objects of common sense" (p. 38) and studying them from many "points of view"; for example, such an object as 'a tree' might be considered with respect to gravity (physics) or sap-flow (plant physiology). He finds these scientific 'points of view' becoming specialized, each eventually yielding a separate science. But he finds that finally each science gathers together its subject-matters into an assembly; and that the new assemblies may be quite different from those

5. Regrettably, however, the 'science' he saw before him was that constructed in the 'absolute' Newtonian background, not that of the newer physical 'event.'

suggested by the earlier lists of "concrete objects of common sense." One may, then, proceed to characterize the advanced sciences either by examination of their 'points of view' or of their 'subject-matters.' The scientist runs great risk if he leans too heavily on the report of either examination alone; he must keep both tests in mind (p. 38, p. 87).

The 'scientific facts' are "stubborn and upstanding things." Nevertheless they are not directly the "concrete objects" of early inquiry, but rather 'factual aspects' of them (pp. 37-8). "Facts are rather phases or aspects than items of natural existence" (p. 70). They are "bare existences," the "bare 'what' of things," in the sense that the scientist must strip off "all further demand for interest or appreciation" and conform his observation to what is before him. It is in this technical sense that facts are 'meaningless'—in the sense, that is, that all other 'meanings' have been discarded, and that their 'meaning for science' becomes solely "their mode of natural existence, their constitutional manner of being" (pp. 32-4).

Titchener develops this position by examination from many points of approach. He makes separate studies in terms of the "man of science," the "world of facts," and "objective and institutionalized science." He compares the "observational knowledge of acquaintance" with the developed "body of knowledge-about." The outcome of this thorough observation, this disinterested and impartial 'observance' of the situations of science in action, is his conclusion that all science is description—a description which is both analysis and synthesis, or "analysis with a view to synthesis" (p. 62). "The outcome never transcends description" (p. 63). "The scientific experience is always and everywhere existential: the world of existence is at once the discovery of science, the gift of science to civilization, and the limitation of science, the only world that science can know" (p. 138).

Within his 'existential' scientific field Titchener accepts freely the "uniformity of nature" as "a methodological postulate, essential for the past and present of institutional

science, and by all means to be retained unless and until the progress of science itself proves it untenable" (p. 76). "It seems," he says, "to be made out with a convincingly high degree of probability that all biological phenomena are correlated with physical, and all psychological phenomena with phenomena of biology and thus, ultimately of physics" (p. 75). His construction *for science*—for that which he describes as 'science'—is as unitary as that of the most ardent physiological psychologist, or as that of Weiss with his electron-proton hypothesis.

Coming at length to the 'psychological fact' as 'scientific,' as 'existential,' we find Titchener radically rejecting any substantive 'psychic' which might purport to be of a different nature, *qua* fact, from the 'facts' of other sciences. The "concrete object of common sense" has no status here: neither has the presentation of 'inners' as opposed to 'outers,' that of 'non-spatials' as opposed to 'spatials,' nor that of 'conscious' as opposed to 'non-conscious' (pp. 151-8). He criticises the 'functional' and 'intentional' psychologies because of their departure from this scientific standard (pp. 158 ff.; p. 257), and while his own earlier work has often enough been attacked on comparable grounds, his critics had best proceed cautiously.

With his construction of science and his requirements for scientific legitimacy thus established, Titchener finds presented to his examination two sciences, or rather, two great groups of sciences, the physical and the biological, and also one other candidate for scientific status of equal rank: psychology. It nowhere occurs to him that this further region of scientific construction may possibly be too intricate to hold closely to the traditional psychological pattern.⁷ Upon the problem which he here faces with his

6. 'Correlated' is unfortunately one of the weak and evasive words upon which Titchener occasionally leans too heavily, despite his stress upon 'laws of correlation' (p. 61).

7. This, in spite of his heavy dependence upon 'language' with its 'social' characteristics, and his frequent recognition of science as 'institutional.' How trustfully he takes the situation of man in society

specifically 'psychological' objective he brings to bear his technical linguistic instruments: namely, 'point of view' and 'subject-matter.' Using 'point of view,' we are to inspect the system of 'existential experience,' the full 'existential universe,' to see how we can thereby classify the typical forms of investigation. Using 'subject-matters,' we are to build, instead, by attending primarily to "particular aspects of existence" (p. 87). Such aspects we may take either primitively, in 'formal' or logical delimitations, or, at a later and higher level, in 'material' determinations of "the common nature of all items" (p. 260). This set of distinctions is far from sharp, but it is not necessary to pause now for criticism.

Using 'point of view,' Titchener arrives at a presentation based upon the completeness of the interdependence—or, alternatively, upon the particular form of the dependence—which the phenomena of the great sciences exhibit (pp. 141-3). When we regard all phenomena whatever as fully interdependent, our point of view is that of physics. But we may take a different point of view. We may regard existential experience as we find it 'dependent' upon a 'physical environment.' Physics, it is true, applies its point of view to the study of the phenomena of such a 'physical environment,' but however hard it works, it continues to study 'interdependence' and never brings to light 'environment' at all. 'Environment' is 'scientific fact'; but, *qua* environment, it is not a 'physical fact.' Phenomena that are studied as dependent upon 'physical environment'; that is to say, organisms, are studied from the point of view of biology. "Limits are drawn by the range of covariation of physical and biological" (p. 143).

How, then, as to 'psychological'? The dependency here is upon "the nervous system (or its biological equivalent)"

is evident (p. 28) where he regards himself as passing from 'simple' to 'complex' as he makes the transition from 'man of science' to 'institution.'

(p. 142).⁸ Biology studies the biological facts of the 'nervous system' as physics studies the physical facts of the 'environment.' But biology never attains to knowledge of these facts in the sense of 'system' towards which psychological facts can be oriented as 'dependent.' Psychology must proceed on its own initiative; it proceeds to a study of the "reciprocal relation of the independent and dependent variables" (p. 143). The phenomena of psychology distinguish themselves from those of biology in that they "correlate . . . with a single organic system" and not with "a total environmental complex" (p. 264). Here is psychology's offering and its base of distinction from the other sciences, so far as 'point of view' is concerned.⁹

One must not read Titchener too carelessly here. What he says is not that physics studies nature in general; biology, the organism in particular; and psychology, certain peculiar phenomena attendant on nervous systems. He is not dealing now with 'subject-matters.' His position is that, although physics proposes to establish full interdependence of phenomena, the moment that an investigator takes the point of view of 'environments,' he passes out of physics and into biology; and the moment that he takes a point of view that reveals phenomena that are specially oriented to 'nervous systems,' he arrives at psychology. He asserts that these are three definite points of view in scientific work, that each of them attacks independently the full field of 'existential experience,' and that, together, their recognition

8. By use of the parenthetical phrase "or its biological equivalent," Titchener allows for whatever the future development of physiology may prove to be, whether by way of 'brain' or 'nerves' or 'muscles.' It is apparent, however, that should this 'equivalent' prove biologically to be a 'whole organism,' then his basis of differentiation would collapse.

9. Titchener orients his position to that of Avenarius (*op. cit.*, pp. 115-7 and p. 138). He accepts Avenarius' definition of psychology, not as applicable to 'all experience,' but as sound only for 'existential experience,' thus compressing it within his own delimitation of 'science.' He is very close to Avenarius when he accepts the latter's 'system C' as 'the nervous system,' not in its biological presentation, but functionally in its covariations and dependencies in experience.

yields one stage, that of 'point of view,' in the appraisal of the relationships of the sciences.

He turns next to 'subject-matters,' with respect to which he distinguishes two techniques: those of 'formal' and those of 'material' characterization (p. 260 ff.). His 'formal' descriptions maintain that the phenomena of physics are 'universal,' which is to say that they are "strictly interchangeable and irreducible"; that those of biology are 'individuate'; and that those of psychology are 'systemic,' this last name manifestly suggested by the 'nervous system,' though not directly by way of its physiological interpretation. These descriptions closely parallel those secured from 'point of view.' The subject-matter 'individuate' corresponds to the dependency 'environment'; the subject-matter 'systemic' corresponds to the dependency 'nervous system.' These 'formal' or 'logical' determinations of subject-matter are, in fact, nothing more than the 'other side' of the 'points of view.' Moreover, we should reasonably expect them, being 'primitive,' to fade out of the picture as soon as 'material' descriptions can be well established.

Turn now to his 'material' characterizations, 'energetic,' 'behavioral,' and 'sensory.' 'Energetic' stands as a safe representative of physical phenomena. 'Behavioral' he uses in a biologist's sense—not without some pleasure in the word as a forensic dagger—although its current range of meanings is hardly broad enough for his purposes. 'Sensory' he offers as a word possessing certain "traditional rights" which may well serve as *locum tenens* "until such time as the accumulated facts point to their natural adjective."¹⁰

An examination of Titchener's final applications of these terms will show many cases in which precision slips. I shall point out only two instances of most unfortunate re-

10. *Op. cit.*, p. 265; and he adds: "Since, however, the very nature of the facts is in dispute, and the postponement must therefore be altogether indefinite, we venture a leap into the half-dark, and choose the term 'sensory' as the counterpart of 'behavioral.'" As for other psychologists, they may "be permitted to define it for themselves."

sult. Significant enough in itself is the fact that editorial supervision in the posthumous publication did not note that the column headings in his tabulation (p. 266) had become interchanged in type, the 'Formal' standing where 'Material' should be, and the 'Material' in place of 'Formal.' Titchener's phrasings in his text are verbally exact, but, tabulated and read in the ways in which he finally applied them, the names fail to compel either the eye or the mind.

The characterizations 'universal,' 'individuate,' and 'systemic,' being 'logical,' should be mutually exclusive. Each of them, supplied with the prefix 'non,' should be capable of application to both the others. Thus, in place of 'universal' we can say 'non-individuate.' But he finds he cannot achieve this as between 'individuate' and 'systemic.' Here all he can say is that the subject-matter of psychology is 'systemic' "within the formal limit of individuation" (p. 264). It is set off against the physical, not at one, but at two removes.

The characterizations 'energetic,' 'behavioral,' and 'sensory' purport to be so far advanced in the assembling of 'facts' that they do not need the primitive 'logical' bracing of the 'formal' characterizations. They should no more have need to worry about the transitional phenomena and the 'marginal' cases than biology about the distinctions between plants and animals, even though present determinations of boundaries are none too sharp. Unfortunately Titchener moves the term 'energetic' across into the 'formal' region of distinction, equates it with 'universal,' and then suggests that 'individuate' and 'systemic' phenomena may be treated as 'non-energetic' in substitution for 'non-universal' (p. 261).

These defects in his final application of his own construction are of a most serious nature. He starts with a postulate of "uniformity of nature"; he proceeds technically in conformity with it; then at the very last moment he comes perilously near to throwing it overboard altogether. He permits his 'formal' and 'material' distinctions to fuse in such a way that, for his three stressed terms, we can

hardly avoid picking out 'energetic,' 'individuate,' and 'sensory' as characterizing the three great types of scientific attack. Still worse, he allots to these terms much more of the sharp 'formal' severance than of the expanded factually 'material' significance at which he aimed.

Comparable is his outcome with respect to the substantial 'psychic.' He rejected this at the start; he proceeded without need of it; yet at the end he lets it, or something indeed very close to it, enter again. It appears in his final use of the word 'sensory.' As a term for 'material' description and held as such alongside 'energetic,' 'materially' understood, this justifies no complaint. Transferred to a primitive 'logical' status, it tears knowledge apart.

Taking these terms 'energetic,' 'individuate,' and 'sensory,' not as his schematic organization, but as the practical outcome which his modifications present, what are we now to say of them? They certainly do not offer us an analysis in terms of the "new scientific objects." They are not "facts which are rather phases or aspects than items of natural existence." They present to us, on the contrary, the old "concrete objects of common sense" which have place, in Titchener's own development, at the beginnings of science rather than in its advanced stages. In effect we have again the old division into matter, life, and mind: into physical things, living things, and mental things.

Titchener had given us a fine picture of the scientific situation and had built up a workable set of verbal instruments to handle it. He had brought his organization and display exactly to the place where it could be read with promise of new light on psychology's problem. Then in his two or three culminating pages he suddenly allowed it to collapse in his hands and made a reading of its results that ran back to, or indeed even prior to, his starting point.

Why? The psychologist of an opposing 'school' may answer: "Because he was always that way." That is as it may be; at best it is a trivial answer. We want an answer

that has more structure, and when we get it, we shall find that it is an answer that reflects even more harshly on the opposing 'schools' than it does upon Titchener himself.

Titchener gave the last ten years of his life to this work. As his editor remarks in the Preface to his book, he most certainly "put behind him his previous judgments"; he "dropped the polemic attitude which had shaped much of his earlier writing, and, as best he could, assumed an open mind." The book, as it stands, was finished by 1919 except for his fine first chapter, "Science," which continued to undergo revision until 1923. A concluding chapter on "Method" remained unwritten at his death in 1927; likewise the further volumes he had planned. Let me summarize the situation in which he found himself when his theory of science stood full-fledged before him.

Science, he had convinced himself, was 'description' in that comprehensive sense which covers analysis and synthesis, observation and observance alike. It was before him not merely *in* language: it *was* language. Over and beyond his examination of the 'man of science' as an individual worker, he had examined "scientific activity in the concrete, as it actually goes on in human society" (p. 45); he had examined it not merely "as a frame of mind," but "what it is when we regard it as a mode of life, the activity of an individual in society" (p. 55). Science as "a body of knowledge-about" was required to be manageable, compassable, available, communicable" (p. 55). This observation and presentation of science in its 'social' form gave the admirable close texture which his treatment shows, even though he rarely used the word 'social' directly. A careful reading of his exposition in terms of the word 'logic' (p. 45 ff.) will show that it is the give-and-take between scientists, their joint procedures in 'communicableness,' that is factually before him all the while, and for which 'logic' is merely a convenient label. It was in this form that science itself became a "new object," "a scientific fact" for his observation. It was in this linguistic-descriptive form that he built up his technique of analysis.

In all of this he made a positive contribution to knowledge. What we need to understand now is why, despite all this fine preliminary construction, his development finally collapsed. Was there, perhaps, something defective in his observation? Or something imperfect in his construction?

We are led to two lines of comment. The first is specific; it has to do with that characteristic of the old mind-language which we have called 'isolationality.' The second, which runs wider, concerns the limitation of the linguistic framework to science as 'existential,' and the neglect or refusal to see for that linguistic form a significance extending onwards into other regions of knowledge.

Titchener was 'isolational' in the extreme in his rendering of the words of the language he used. We may even say that 'isolationality,' in a somewhat broader sense than we have been using the word, was determinant in the end for his distinction of the three great scientific fields under 'formal' rather than 'material' implications. It was such 'isolationality' in the narrower sense which prevented his raising even the hint of a question as to whether the third scientific field, beyond physics and biology, could be anything else, anything more intricate or complex, than an isolational psychology. He was isolational also in the sense in which the word may be taken to cover the mind-language sector of 'apprehensionality.' Whether he faced situations of 'man-object' or those of 'man-man,' he always read or interpreted 'what happened' as dependent strictly upon the nervous system of the single organism—as isolated thus, and never as in full 'function' or 'event' as it appears in the world. He 'observed' science, as we have seen, much more broadly than this, but he 'read' his observations back again into the narrowest and most isolational language. Therefore, all prepared though he was to make direct 'analytic and synthetic' descriptions, his ancient linguistic implications for many of his key-words betrayed him, and he fell backwards at the end into an older form of 'objects.'

It was, of course, a similar 'isolationality' which appeared in his reservation of a field of 'Value' as distinct

from that of 'Existence.' I am not here taking any position whatever as to the 'realities' that may or may not exist with respect to either Value or Existence, nor as to what the 'reality' may be for that more comprehensive term in which the two are joined: namely, 'Experience.' I am working strictly in the field of 'language' and 'science' and 'knowledge.' Around each of Titchener's three commanding words, Experience, Value, and Existence, clusters a great group of allied terms, with their peculiar implications of meaning by which they are held together in system. Now what happened was this: Titchener was compelled to use many terms from the kinship of 'Value' in the linguistic analysis of his 'Science as Language,' and he did not permit his own techniques of linguistic appraisal to turn back upon those terms and test them for their adequacy in the particular uses he made of them.

Without appraising Titchener's own construction of 'Value,' and relying wholly upon my own observation of the terms at work, I should say that 'point of view' and 'subject-matter' are themselves terms of this type. So also are the distinctions 'formal' and 'material' as applied to subject-matters. If these terms are to be used with safety in scientific construction, they must submit themselves to organization with respect to scientific activities and observations in whatever way these latter require for their coherently successful application. The same is true of various distinctions which we find him making all along his course, such as those between 'observation' and 'logic.' His vague use of the phrase 'functional or logical' in some of his most important definitions is another linguistic procedure that should have received his close attention. Clarification is greatly needed, but to secure clarification he would have had to advance his linguistic analysis well within the regions of 'Value' itself.

More important by far, however, from this point of view, is the distinction he takes for granted, and relies upon, between "concrete objects of common sense" on the one hand, and "scientific facts" on the other. This is cer-

tainly a distinction of 'Value' under whatever construction he may have had for it. The "concrete objects" were opposed to the "scientific facts"; the latter were 'existential,' and the former we must therefore rather regard as 'valued' phenomena. One way or the other, further organization of the exposition is necessary. It is not at all Titchener's historical exposition of the growth of science to which I am objecting. Well has he set this forth and there is a most important differentiation involved. In direct statements he does not abuse his position. It is his lapse at the end of his development which is at issue.

I shall maintain that the same linguistic framework, and the same linguistic stress in analysis, which Titchener proposes for the 'existential' in his special sense of that term, must be expanded, not only across the terminologies directly or indirectly associated with 'Value,' but also across the "common sense objects." The accomplishment of this requires a form of postulation which will do justice to the wide ranges of materials involved. To the establishment of such postulation we shall turn our attention in Part II, in preparation for its definite use in the researches of Part III. It has not been for the purpose of criticizing Titchener, or for attacking his point of view, that I have examined his prolegomena here; but because his own maturest work contains so much that leads in the direction we must go, while at the same time it indicates so sharply the character of some of the additional steps that are required. Scientific facts as "phases or aspects" will be exhibited, thus using the very terms that Titchener himself used, but under a much more comprehensive organization with the rest of the 'linguistic' world.

The difference of approach between Titchener's treatment of science as description, and that which I shall later set forth, may be simply stated. While he holds a 'philosophic' in reserve, my position, in contrast, will be that as the science of description expands, its linguistic consistencies will find no bar to their procedure; that what one today regards as 'philosophical' will come to view to-

morrow in linguistic forms and under linguistic tests, as certainly as all that has gone before; that, in the end, all our presentations, even those of the 'individual man' and of his 'values,' will so come to test; and finally, that this advance may not stop until the hypothesis of full linguistic functional participation—or whatever alternative hypothesis may prove to be better—has been thoroughly developed and tested for all the worth it may possess.

XVI. TERMINOLOGICAL SUGGESTION

Psychologists possess few technical terms which all can use alike as standard in intercourse. Not even such words as 'stimulus' and 'reaction' have stable meanings beyond the confines of small special groups of investigators. As for the word 'behavior,' it is chameleon-like in its shifting of colors as it passes from system to system and from man to man. This situation is unfortunate for those workers in other fields, physical or social, who find it necessary to secure psychological orientation. They are more often betrayed than aided.

The terminological status is, I think, reasonably clear. In certain preliminary stages of science, the presence of safe and certain data is taken for granted, names are applied, and the struggle is under way to establish more and better truths about the names. In later stages, investigators are more apt to content themselves with securing the highest precision practicable for each technical term they use. Here, instead of attempting to force dominant values into a given word, they split and differentiate their terms to accord with the accumulating specifications of fact. They are thus able to obtain many words to which all alike can hold fast and firm, no matter what confusions of inquiry still surround them.

In our examination of the psychologies we have taken for granted a standardized physical knowledge and a very considerable degree of standardization in biological knowledge, and we have analyzed some of the efforts that are being made to organize and standardize psychological knowledge alongside these two other forms and in harmony with them. We have observed such phenomena as physical stimuli and physiological reactions; we have observed the biological situations of organisms within environments, and other more complex situations in which the processes that appear are those of 'perception' on the side of the organism.

and an accompanying differentiation of 'objects' on the side of the environment. We have observed still more intricate phenomena in which influencings and responses among organisms occur—in particular, those that take linguistic forms—where the attempted reduction of the phenomena to direct physical, physiological, or perceptual processes limits inquiry rather than facilitates it.

In such a situation there would now certainly seem to be opportunity for a specific application of at least a few of the more important psychological terms, so that all psychologists could employ those few terms with precise communication of meaning. If 'stimulus,' for example, is to be taken to imply such a train of events as physical techniques can follow, then it, or some alternative word, might be used for the precise meaning, and for no other. If the physiological process in nerves or brain or other body components is to be brought into the account, it could easily be specified in direct physical sequence, or in psychological development, in such a manner that accurate comprehension of meaning could be secured. If a situation arises in which 'object' is studied in opposition to what is so commonly called 'whole organism,' then that likewise could attain its precise name.

It would be easy enough to prepare a table covering procedures in all four sectors of the mind-language problem, as we have inspected them, by using such terms as stimulation, reaction, conditioning, adaptation, incitement, response, announcement, and reception. But to draw up a table is not enough. There must be firm agreement for the use of a few critical terms in close specifications of meaning: something that can be achieved only as the men most active in specialized research adjust, as closely as possible, one to another, their positions in special lines of observation.

Until agreement of this kind is reached, it may be suggested that psychology itself will fail of the full degree of progress possible to it; certain it is that the non-professional outsider to psychological inquiry will fail to obtain the definite aid he often so greatly needs.

PART II
KNOWLEDGE AND FACT

XVII. THE PROBLEM OF POSTULATION

In undertaking to appraise the status of psychology as knowledge, we found it necessary to confine ourselves to scientific knowledge, and thus to the status of psychology as science. This was because scientific knowledge is the most dependable, the most definite, the *best* knowledge that we have; and because, through such restriction, we could avoid many areas of vague and confused meanings which are involved when the words 'knowledge' and 'psychology' are used in their more general senses.

We proceeded with our investigation under the hypothesis that *all* of our necessary materials could be observed, analyzed, and appraised in linguistic form. We took the sciences as embodied in Language, and thus, deliberately, we investigated them.

Language, so viewed, is no such limited abstraction as is the 'language' of grammarian or philologist; nor is it some specialized phenomenon of inquiry set before himself by psychologist or sociologist as a minor compartment of his inquiry. It is language as the behavior of men; language as communicative behavior observably spread out in long historical durations; language as action in nature. It is language directly presenting itself fraught with 'meanings'; with full inclusion of all 'conceptual' values; with the *inclusion* of these values in place of their detached assignment to some magic of 'mind' or to some animism of 'gray matter.'

In our pursuit of inquiry under this chosen hypothesis a technique of sharply marked characteristic appeared. This technique rested in the refusal ever to let judgment depend upon an assumed dominant bond between 'word' and 'fact'—upon any specific use in a psychological system of some particular term as a 'true' parallel or representative

of 'true' fact. It required us to abandon whatever deep devotion we may have felt for a specific verbal orthodoxy, and to abandon equally any pleasure we might find in an ingenious verbal novelty. It demanded that we replace all recourses of those kinds by a continuous insistence upon the coherence with which the basic terms in psychology are employed with respect to one another and to the development of the construction. So important did we regard this technique that we advanced it to first place in our discussion of the hypothesis we were proposing to employ.'

Looking at our technical procedure as thus emphasized, some critic may at once say that it is nothing more than a detail of investigation—the detail of consistency in statement of results—which is always of interest, sometimes of much significance, but never of critical importance to science itself; and further, that to employ it, no such sweeping hypothesis as the one we set up is needed. We could easily be content with his attitude during the course of our detailed examination of the chosen psychologies. Now, however, it is necessary to go further; our inquiry into psychological construction must be regarded as merely a small experiment under a much wider postulation with respect to knowledge and fact. Our application of the hypothesis in those preceding studies was, in truth, very far from being sweeping; it was held closely to the situation of modern psychological research as it appears in its specialized scientific background. But even at this, it is very doubtful whether any regard for consistency as a mere nicety of presentation could possibly have led to the inspection of the space and time frames and segmentations of the psychologies as themselves phases of that consistency.

However this may be, we shall now proceed from the hypothesis as it has been used in the special case of the psychologies, to a much wider postulation: one that will make expansion to the widest situations of knowledge. We must obtain a form of postulation for the procedures and

achievements of modern investigation in their full historical and evolutionary setting. We require it, not merely to establish soundly the situation of the psychologies, but to serve many important purposes in further research.

The situation before us is that of Knowledge and Fact. While postulation for the problems that here arise is of great significance for all scientific enterprise, it is of critical importance today in three great fields.

Two of these fields, psychology and sociology, are sciences in hope rather than in accomplishment. In the case of the psychologies we have seen the urgent need for a technical formulation of observation and construction which can be employed by the whole working fraternity of scientifically-minded specialists, if they are to bring their separate achievements into adequate mutual organization. In the case of the sociologies we shall find that the existing professional formulations are chaotic, and that the situation is so bad that even the simplest practical program cannot be adopted except in blindness to its outcomes beyond those of the moment or the day.

The third field stands at a much higher level of development, but its need is equally pressing; indeed, in some respects it is nearer than the others to the moment of close attack. It is the field of modern physics, where radiant and corpuscular 'facts' are blended. Light-rays are experienced, while at the same time they furnish the widest tests and constructions for all else that is experienced or known. They are mathematical formulations, and thus linguistically behavioral. They are basically factual in knowledge, if there is basic factuality anywhere in the constructions of our generation. They refuse to conform to the older factuality of 'matter.' Experiential, linguistically behavioral, soundly factual, they are, nevertheless, in all these respects confined within the purviews of knowledge, and yield us no certainties 'beyond.'

Whenever any attempt is made to secure definite formulation of their central problems, these three regions of

critical importance for any postulatory construction of modern knowledge are seen to be directly and intimately bound together. All 'knowledge,' we are justified in saying, is in some manner 'social';² our systems of knowledge and our presented contents of knowledge are before us in forms passing far beyond any value we can give to the term, or to the fact, 'single man.' We observe, further, that the knowledge that is thus in some manner 'social' includes our knowledge of the physical world as well as all our other knowledge. Yet this very 'social,' so far as we gain knowledge of it, must be framed within the wider body of knowledge, inclusive of the physical, vital, and psychological, within which its place is that of but one single component. Neither 'social' nor 'psychological' can hope to secure permanent formulation except under clarified offsetting with the other; alike they involve participations in, and presentations of, the 'outer' world, the 'physical,' which itself reaches up into and through them, and which, 'in knowledge,' may in the end dominate them. The requirements of advancing physics, the hopes and programs of the yet-to-be-born social sciences, and the acute birth struggles of the psychologies combine in one set of problems common to them all, in such a way that some form of determination is being forced upon each of them by its own deepest and most immediate needs. There is no prospect of solution for any one of them separately; on the contrary, there is every indication that the solution for one will be the solution for all, and that the search for a solution must go forward in all of them conjoined.

If the special hypothesis we have used in the examination of the psychologies, or the wider postulation we shall

2. H. Levy's recent book, *The Universe of Science*, offers lucid statement and brilliant picture of science as embedded in society. Without venturing to involve him in any way in the particular issues of my own postulatory development, I may appeal to his envisagement of the full scientific-social situation as making vivid those situations which I here present in skeletonized form.

construct for the more general purposes of knowledge, does violence to what we know as 'fact,' it will be ripe for condemnation at its very birth. Factuality is the beginning and end of all knowledge. But from within any one single department of inquiry, 'fact' can neither be determined certainly nor appraised; above all, no single generation can hope to establish it safely for all time under whatever manner of expression happens to be most characteristic of its own age. Issues of fact and of factuality require much wider appraisal and much safer determination than that.

In appraising 'fact,' we must take into account its involvement in procedures called 'knowing' and 'being known.' These procedures, looked at substantively and comprehensively, we call Knowledge. We have, then, at least two terms, situations, parts, functions, phases, or aspects to take into account in any search for a postulation such as we desire. These are Fact and Knowledge.

When we set before us the first of these two situations, Fact, and proceed to examine it—always, of course, with an eye to knowledge of it—we are brought at once into contact with processes of experiencing. Anything that presents itself to us as Fact in divorcement from all experiencing will be a wavering, borderland presentation, nothing that will serve as at all dependable for us at the center of construction. To represent the element of experiential contact as it enters our postulatory inquiry we shall adopt the word Experience.* By Experience we shall understand all those phases of our situations which we describe in terms of the reactions of living animal organisms, and in particular, of the living human being. We shall take it as

3. The word Experience will be used only in connection with the development of this general postulation, where it has sufficient definiteness for our immediate purposes. It combines what we here need to observe as combined. In Part III, where direct observation and construction will be attempted in the field of both psychological and sociological behaviors, the word Experience must give way to more precise terminology.

covering the 'psychological,' including the 'individual,' the 'organismic,' and the 'behavioral' as they appear in current psychological inquiry.

When we set before us the second of our two essential situations, that of Knowledge—and always, of course, with an eye to its own factuality—we can make no progress at all unless we appraise it in a frame of Language. Any Knowledge that presents itself for our consideration in divorcement from all Language will be just as much of a wavering, borderland presentation as some 'fact' that is divorced from all 'experiencing.'

With Fact implicating Experience and with Knowledge implicating Language, we have, then, the four phases—Knowledge, Language, Experience, and Fact—to take into account in any generalized postulation which we may hope will be sufficient for our needs.

Such an approach is somewhat more complex with respect to the factors introduced than that which is usually made. It is a well-known and very common assumption that Fact and Experience can be taken as standing face to face, with Experience furnishing the necessary 'guarantees' for Fact, and Fact the necessary 'causes' for Experience. Here Language and Knowledge are ignored or canceled as factors in the postulation, or are reduced to incidental status; the heavy stress of inquiry is upon what such words as 'guarantees' or 'causes,' or some of their innumerable substitutes, can 'really' mean. What then happens in the course of interpretation is also well-known. Great enterprises of metaphysical, philosophical, epistemological, and logical inquiry arise, bitterly resisting all treatment of the kinds called 'scientific.'

In contrast to such procedures and outcomes we shall find that where Language and Knowledge are taken equally into account along with Experience and Fact, we can hold very closely to some of the main characteristics of scientific method. As we progress in understanding, our necessary postulation will emerge in direct extension of the common,

every-day procedures of scientific hypothesis, and in no other sense. We shall have no thought of winning through to contacts with 'truth' or 'reality,' and no more direct concern with the possibilities suggested by such words, than has the working scientist as he goes about his daily technical activities. We shall face situations of knowledge and science, and of fact and language and experience, as we find them spread out around us in the world; we shall face them naturalistically, empirically in the scientific sense. We shall seek merely to bring a form of order into these situations in a way that will be helpful for further inquiry, and it is as just such a form of order that postulation will emerge.

Against one dangerous step we must always be on the watch. This is the adoption at too early a stage of any narrowly limited definition⁴ for some one particular element of our situations of inquiry. The danger is that all else will at once undergo distortion to make it conform. Such too narrowly limited definitions for language have previously been discussed, and will come closely into reckoning in Part III. But the danger is the same for definitions of experience, or knowledge, or fact. It is easy, with a limited specification for 'knowing' or 'being known,' to show that under such specifications we manifestly face much 'fact' that is 'not-known' or 'not-yet-known.' If, however, we go ahead to inspect freely some 'not-known-fact,' we quickly discover that a certain 'knowing' of situations more widely taken is involved even in this positing of 'fact' that is classed as 'not-known'; and moreover, that this further aspect of knowing is one that we are required to take definitely into account. The question of justification for the preliminary limited specification is then forced upon us, but this question proves to involve that very problem of postulation in which we are now engaged. For all four

4. 'Definition,' as a word, has many implications alien to our linguistic procedure. See the remarks on conventional terminology at the close of chapter XXVII.

terms of our inquiry, Language, Knowledge, Experience, and Fact, the case is the same.

In proceeding with this inquiry, I shall first place the stress of attention upon Language and Knowledge, examining them in a background of Experience and Fact. Here the postulatory construction will be accomplished. Under this construction, however, Experience and Fact come to have an appearance strange to that which is claimed for them where the situations of Language and Knowledge are ignored or treated as incidentally instrumental. In a separate chapter, therefore, I shall transfer the stress of attention to Experience and Fact, in order to show that this strangeness of appearance is superficial; that it affects only the weaker, and not at all the stronger, portions of our knowledge, whether that knowledge be scientific or practical.

XVIII. LANGUAGE AND KNOWLEDGE

We are now to undertake inquiry into the functional organization of Language and Knowledge. In the background lie many insistent questions. If Language is a fact or a behavior, what is Knowledge? With what right may Knowledge be regarded as substantive? If it may be so regarded, must Language then be taken as instrumental or operative with respect to it? Or can Language, on its side, find substantive presentation? Is it possible that both Language and Knowledge are aspects or phases of some more comprehensive situation in such a way that no separate investigation of either, taken as apart from the other, will have validity for our more general purposes of inquiry? If this last be the case, how may we, or how must we, envisage this larger situation of which they are aspects?

When such questions as these are brusquely approached, the answers, where not formally philosophical, will ordinarily depend upon implicit attitudes taken by the questioner towards certain of the very contents of inquiry that are at issue. Such implicit attitudes have to do, as is at once evident, largely with the status of the human being regarded as psychologically or mentally in action. We shall here use the greatest caution in approaching our problems, and shall keep in mind continuously the complex linguistic situations of man-body, man-object, man-environment, and man-man, as we have found them in evidence in the work of the psychologies in our preceding studies.

Our procedure will be empirical in the sense that to no one of the leading words we employ will there be allotted, prior to the investigation or authoritatively, any precise theoretical construction of its own. Avoiding such

authoritative meanings for the words we use, we shall find ourselves working on the surface of phenomena, endeavoring to assort them and to organize them thus, and allowing their possible 'deeper' meanings to await future and better knowledge.

If we are to make a surface survey, the first thing we must do is to select a terrain. Knowledge may have its home in the empyrean, but we are in no position to survey it there. Language may have lodgment in books, but no sooner do we attempt to seek it in them than we find ourselves far beyond the walls of such petty dwelling places. The surface exploration of either Knowledge or Language brings us at once into the midst of activities of the type we call human, and it is therefore across the situations of human living that we must survey them. I shall choose to examine, not the duller, but the livelier regions of such activity; for a special case I shall select the sessions of a congress of scientists, let us say of physicists and biologists, met to consider problems of joint interest.

This congress presents itself to us in the persons of its members; it is spatially located in a certain hall in a certain city and temporally dated in a certain week in a calendar of historical development. The *space*, experienced locally, runs out municipally, cosmically, and sidereally into a wide range of connected experiencings; at the same time it furnishes important elements or conditions of the factual researches of the scientists gathered in congress, elements which are linguistically represented in all of the discussions that engage them. The *time*, with its constructive prolongations backwards across and beyond the origins of human life and forward into anticipated futures, near and remote, is similarly present in experience, knowledge, language, and fact. The *life* (or lives) of the scientists so assembled is itself a specially dated and located presentation within a great human living, bound genetically and culturally into far spaces and times. This life and these lives are themselves present in experience and knowledge and language and fact.

If, as a surface surveyor, I should now attempt to frame my exhibit solely within the walls of the room, the week of the meeting, and the living of those present, it would be to show myself painfully deficient in skill. My approach would be no better than that of an investigator of rivers who, finding a level stretch of stream bed, would attempt his examination with eyes closed to the fall of the land above and below.

Again, if I should concentrate all of my attention upon some one fascinating feature of the situation, my approach would be scarcely better. That feature might be something comparable, in the case of the phenomena of rivers, to a primitive 'river god' or to a 'rock color'; or it might be something as carefully selected and closely studied as is Newtonian gravitation for the physical geographer. We should be fortunate indeed if we possessed any characteristic akin to this latter to guide us; but even if we assume that some such line of guidance lies in our materials awaiting the finder, it is not yet established for us in dependable form, and so our initial survey must be wide. Our obligation, therefore, is to keep alert to all that we can find and have power to see, and see it all as set within its wide frames of progression.

(1) I shall now make the assertion that in the field of our survey and in its required extensions of surface, nothing is found that can safely be taken as wholly independent of knowledge or of experience or of fact or of language. Positively put, this asserts that whatever we touch in our exploration exhibits all four of these aspects, and in such manner that we lose full contact whenever we ignore any one of them. This is not to deny that it is practicable, and indeed necessary and wise, from time to time to make studies in terms of one of these aspects alone, or even to pick out one of them in positively substantive form for consideration. Its import is rather that all such substantive presentations are closely specialized in purpose, and that their full statement should include an explicit

determination of the type of specialization chosen. In any such explicit determination the participation of the other aspects would be manifest.

(2) I shall make the further assertion that under these four specializations, taken themselves as aspects, our survey can be adequately carried forward without oversight of any characteristics which may be vital as indications of what we are seeking.

In making these assertions it is evident that I have employed the frame of fact. I say in substance: "These are the facts." Thereby I date and locate myself in historic society. If I broaden my presentation in adequate recognition of the approaching futures, I must transform the assertions from those of fact to those of postulation; then my assertion will become: "There are the postulates under which investigation can most efficiently be carried on," and herein I hold myself in a linguistic frame. As surveyor of these surfaces I am, on the other hand, reporting observation in the experiential frame, primarily that of my own studies, but connected into human pasts and futures. Again, the whole may be set forth in the guise of knowledge; but this procedure itself is possible only by the aid of language, and by its attribution to long durations of 'society,' which is to say, of 'experiencing men.'

We may observe that whatever goes on in the congress is in the form of experience; that whatever is discussed in terms of fact is presented with reference to experience; that language can be cut off from experience only by a sharply specialized definition; and that knowledge can be expanded beyond experience only by a general appeal to possible further experiencings, in which process very definite use of experienced language must be made. The very chairs the members sit in are there as experienced.

That the aspect of fact covers everything hardly needs emphasis. It applies to the chairs, the lives of the delegates, their experiencing, their discoveries, their validating and invalidated theories alike.

To show that everything has the form of knowledge is possible as soon as the communicative system between the persons present is stressed. This knowledge form is not some generality of knowledge, but the knowing that is present in active behavior. The knowledge is evidenced wherever there is an organizing of experiencings through linguistic means, or through whatever other communicative means one may assume.

Greater difficulties arise when an attempt is made to show in two or three short sentences that language is similarly general in application to all that our surface survey involves. This is because language has been so long and so harshly degraded to the place of a special and often almost incidental instrument of man. It will be at the end, not at the beginning of this essay, that the exhibit can be given.

Objection will be made, of course, to all of these assertions. One objection that I should regard as thoroughly pertinent might arise when some one inspected directly the terrain which I have presented—namely, the congress of scientists—and then proceeded to point out component materials visibly detachable from the four aspects or from one or more of them. I am frank to say that I do not anticipate any objection of this type. I am assuming, naturally, that the person who examines this terrain will contribute a willingness to see what is there before him, just as a microscopist or spectroscopist is willing to accept the reports of his instruments even though he has not expected the information they yield, and does not like it at all in his first view. If objection of this type is made and maintained by further observation, that will mean merely that I shall have to abandon altogether the construction here presented, and seek a better one.

The objections that I do anticipate will be of wholly different type. They will rest in assertions of alternative constructions, well established in habit, and themselves purporting to be, or to present, *fact*. The establishment of Fact will be rather their beginning than their goal. In general,

such constructions will be of two classes. Either they will, as is most common in the cases of Experience, Fact, or Knowledge, hypostatize rigorously one aspect to the partial or complete elimination of others, or, as in the case of Language, they will give one aspect a definitely and permanently subordinated and instrumental position. They will use different prisms with which to make their observations, and their observations will, it is manifest, be correspondingly different. But the user of one set of prisms has no right, in this age of modern science, to condemn all further sets because their reports are different from his. The problem before the world is of quite another nature. It is to discover, from a careful study and comparison of the reports from all the different sets of prisms, which of them may be counted on to give the most useful results for the widest purposes of investigation.

To illustrate: If the congress of scientists is inspected as one of just so many theological 'souls,' then evidently observation and report will be such that it cannot be classified at all under any of the various forms of presentation most often used in the current era. Similarly, if the congress is seen as so many detached 'persons' or 'minds' or 'experiencers,' and if these separated experiencings or systems of experiencing, presented in specialized 'psychic' formulation, are taken as the basic facts of the congress, then the four aspects of the terrain which I report will not be identified. Again, if the basic 'fact' before the observer is a great range of 'physical' matter in physical space and time—that is to say, if the observer holds that the physical facts and sciences, as he himself conceives them, are today so certainly established that all else must yield to them—the four aspects will not be seen; in this case the 'experiencing persons' will be viewed as peculiar complexes in the physical field, and the language and its meanings and all the knowings will be moulded to conform to that specialized factual form. Finally, wherever knowledge is erected into absolutism, some of the observable aspects are hidden from view.

If it is pointed out to me that experiencing is personal and individual, and that, without the positing of 'facts' independent of experience, the orienting of experience to experience would be hopeless, I readily grant it under a construction which makes the person substantive and basic. But whether such affirmation of the substantive person is right or wrong, true or false, factual, hypothetical, or fictitious—and I have no need of taking position in advance on any such issues—and even though such affirmation has historic respectability and is a standard convention of our times, it is not an adequate surface survey of our terrain, since whatever is there for examination has the form of experiencing or being experienced—an aspect which the modern physics of electron and wave is bringing sharply to our attention in contrast to the positions of the older physics and mechanics.

Again, it may be pointed out to me that the 'past' is before our observation in 'knowledge' but not in 'experience.' It may be. I am deciding no such issues—but the surface survey does not indicate it. That attitude reeks a little too much of the puzzler as to where memory 'exists' when remembering is not being done, to be given authoritative control over our observation. The knowledge, the constructive past, and even the positively affirmed factual past, together with the language used to frame them and secure communication about them, are all present with experiential aspects.

We proceed now to the linguistic aspect. Aristotle studied language and gave us laws of reasoning. In time his formal canons became transformed into "laws of thought," while their linguistic embodiment became subordinated to the reified 'mental' power. It is true that 'laws of thought' are not so popular now as they once were, but the linguistic embodiment nevertheless retains, in current attitudes, the degraded position to which it fell when 'thought' as substantive was central to the student's attention. Even the recognized importance of mathematics for

the advance of research in physics and chemistry, and in lesser but important degree in other science—and this is nothing less than the resurgence, for science, of linguistic dominance in precision forms—has not yielded for Language itself, as an aspect of all knowledge and experience and fact, any adequate recognition of that vital aspectual position which we here assert will be exhibited under close observation and continued study. Vision is still veiled by old patterns of construction.

What is it that we are to understand here by the word Language?

Let us first list what we may call its 'physical' manifestations: understanding by the word 'physical' no sharp construction in severance from 'psychical,' but taking the word merely as yielding conventional descriptions, so far as it may seem to apply. Here we shall find books, with their chapters, paragraphs, sentences, words, and letters, and the associated printing presses, type, paper, pens, ink, and typewriters. We shall find also, and may by no means omit, light rays from paper to eye, muscular and neural optical activities, and neural prolongations into the brain. We shall find in another group the air waves from voice to ear, the muscular neural activities of the ear, and the muscular activities of the voice with all their neural organizations. Beyond both of these we shall find, even in this direct physical inspection, transitions from each of the two indicated sets of procedure to the other, as when vocal dictation results in manual transcription, or as when one reads aloud.

This 'physical' description, however, by itself yields us only one aspect of that which we have to take into account when we employ the word Language. The physically stated interconnections of printed words and air waves, of talkers and hearers, and of writers and readers are not sufficient. The full system of interconnections, as set forth in the terminology of 'meanings,' is also essential and must be included in the description.

Efforts have indeed been made to eliminate this terminology of 'meanings' and to reduce it to some form of 'physical' description. Thus certain types of students use the word 'behavior' to apply to the physically stated activity of the human participants and eject the remainder of the physical descriptions into an 'environment'; they label likewise as environment certain great characteristics of the system of 'meanings' and reduce what remains of these characteristics into a terminology of 'reactions' or 'patterns,' and so, suppositionally, into physically stated 'behavior.' All this is a makeshift procedure from a highly specialized point of view and for a closely limited set of purposes, whether those limitations are clearly recognized or not.

There is one sense, and I regard it as a sound sense, in which we may say that the physical *description* extends everywhere that Language extends, and so across the full system of linguistic 'meanings.' Unfortunately, however, a physical *interpretation* (understanding this term to designate the most complete description practicable) must be held strictly within a frame of physical space and time—however that physical space and time may undergo modification in accordance with the factual development of physics—and it would be absurd today to attempt to build a systematic interpretation of linguistic meanings on any such arbitrary and dogmatic physical basis.

The most common conventional procedure is to hypothesize a jump at some presumptive 'point' in the brain from the physical description of Language (or of any other human behavior) to a 'psychical' description—though indeed what a psychical 'point' of descent from such a jump might be is far from clear—and thereupon to proceed to a separate psychical interpretation of the full system of 'meanings' in the new psychical realm at the far end of the jump. Such a jump, however, is itself extremely defective in meaning, so long as the physical space and time frames do not carry forward or reorganize themselves continuously or connectedly in its course; and since they do not so carry on,

we hardly can be expected to give it any serious consideration for our wider purposes of knowledge. In the realms of Gods or ghosts such a jump may have standing, but not in those of careful and thorough research.

The procedure which we shall adopt here is to inspect those conventionally styled 'psychical' characteristics which do not and cannot lend themselves to a technically 'physical' interpretation, as themselves applying across the full field of Language. We do this just as, in the contrasted case, we have assumed the conventionally 'physical' characteristics as running across the same full field. We then apprehend our systems of meanings as proceeding with our visible and tangible and audible linguistic activities throughout their entire course. The printed words as they stand in the books bear their meanings and shades of meanings with respect to one another; they are in systems of meanings throughout — in phrase, sentence, paragraph, theory, postulation, philosophy. These meanings connect and can be traced along the routes of the muscular and neural activities of the one, the two, and the many men in whom they are found, and in all of the connective radiation and vibration. Indeed, these verbal and systematic linguistic meanings provide the only specifications that we have for the very books, letters, nerves, muscles, and men themselves, and for the living, as set over against the non-living exhibits of the world, among which former the men in turn secure notable segregation.

It is easy now to suggest that we are here erecting a distinction of subjective and objective aspects of language, but the suggestion is trivial. It would amount merely to the application of a defective distinction, developed under a much more primitive system of vision, to the later and more intricate observations. The aspect that might thus be called the subjective has no locus except in the objective; so far as the word 'locus' has any coherent value, it is equally true that the aspect called objective has no locus except in the subjective; and in each case locus and aspect are co-

extensive. Better is it to survey our linguistic surface, record the result, and provisionally rest content.

Language, taken in this way, absorbs very largely—in the end, we may even find, entirely—the meanings or references which commonly are ascribed to ‘thought’ and assumed to inhabit the region at the far side of the ‘physical-to-psychical’ jump.¹ Language is not itself hypostatized in substantive presentation, and no more is ‘thought,’ though in either case the investigator is free to employ a substantive presentation for this or that particular purpose within his own working schedule of meanings. While our own treatment rejects the mysterious ‘quasi-localization’ of the ‘psychic’ in physical space on grounds of linguistic coherence, and on many other grounds as well, ‘thought’ is nevertheless not left without ‘locus’ or habitation. Its locus is not some ‘point’ in the brain—itself linguistically as incoherent as the ‘pointless’ psychic—nor the brain as a whole, nor even the human organism as a whole. As for ‘language’ so also for ‘thought’ the locus lies in many human beings interacting with all of their interconnecting materials and processes, not in some arbitrary space and time adopted from the procedures of other branches of investigation, but in such space and time as may be developed in the full range of the study: a space and time which we may label for our convenience, in advance of its more thorough examination,² ‘behavioral space-time.’

Language, as we are taking it, must also be susceptible of extension in thorough study and under careful analysis, and not at all by dictum, across the living of the higher animals, and backwards, we do not know how far, across other animal forms. Perhaps everywhere that we find any form of intercommunication, we must recognize it, or some

1. For a discussion of ‘thinking’ and ‘thought’ from this point of view, *see* chapter XXIX, section 6.

2. For the use of this term and for analysis of the type of construction it represents, *see Revue Internationale de Sociologie*, vol. 37, p. 251.

3. *See* chapter XXVII.

extension of its construction, or some anticipation of its differentiation; and everywhere that we find co-ordinated action, we must be alert for some possibility of its presence, or of the presence of some preliminary or germinal form or representative.

Language, so presented, is most certainly experiential; if there is Knowledge, Language will most certainly be a structure or locus or phase or bearer of it. Such Language is both fact and representative of fact, intimately bound with fact, wherever fact may be appealed to. It is not some mere special behavior of 'a man' co-ordinated in some way not definitely intelligible with similar behaviors of 'other man'; it is a great type or pattern or aspect of behavior of 'all men' in the sense of all human activity, spatially and temporally extended—with the technical values of such a term as 'all men' still to be established.

If 'all men' are experiencers; if 'all men' are reactors in the midst of 'facts'; if 'all men' have their reactions bound in a knowledge system—so likewise 'all men' have all their experience and fact and knowledge framed by way of language; and Language stands forth as one of the great aspects of whatever we study when we wish to get a coherent frame for a generalized statement of practical living and its extensions into science and philosophy.

If experience can be taken as the personal fact; if facts in general are taken as the scattered 'stimuli' of experience; if knowledge is the wide social embodiment of experience—so Language is the wide social formulation and embodiment of fact and knowledge. Such phrases have no pretense to accuracy of expression. They are not yet factual reports. They are but suggestions of the characteristics of the surfaces we explore, and guides to further investigation.

What we have secured thus far is justification for making our investigation, not 'compartmentally,' but 'aspectually.' We have, I repeat, no justification for dogma, either in terms of Knowledge or of Fact; but we have every

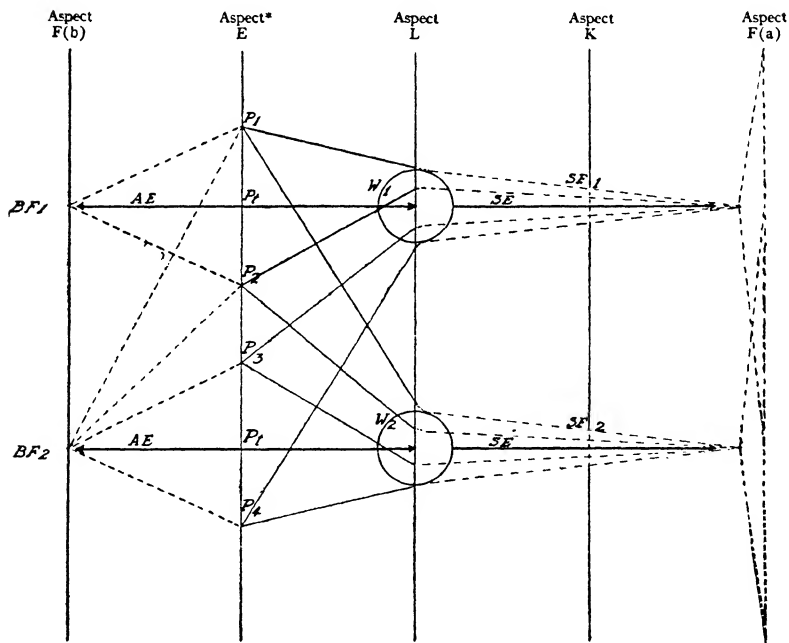
justification for hypothesis in Language, and for experimental procedure in Experience. To proceed 'aspectually' is equivalent to saying that we have secured something of the nature of a common denominator for all the materials of our problem, not pretending to assert it in verities, but nevertheless acquiring it as a promising tool. Various words suggest themselves as candidates for the naming of this common denominator. All of them, however, carry with them implications alien to our purpose.' By far our safest course is to regard ourselves as now working in one great field of investigation, without attempting to characterize this field more closely by the use of words taken over from the conventional speech forms developed in the past by and for the purposes of compartmental construction.

With this much orientation let us now return to our immediate terrain, the group of scientists, and subject it to closer analysis with a view to securing more exact vision. For this further study I shall use a diagram. This diagram is an aid to analysis. It is itself linguistic with respect both to the lines drawn in it and to the letters and numerals it uses. It does not classify assumedly detachable 'facts,' but instead holds 'aspects' apart so that they can be studied. It is itself a procedure upon its own line, L, that of the linguistic aspect, and in the intention, SE, that of the Scientific Effect (*See* p. 155); it is never to be interpreted in terms of the type of procedure it exhibits in the direction from L to F(b). So read, it can be profitably used, but not otherwise. For convenience of phrasing, and for that only, we may be permitted to speak of each aspectual line as a 'locus,' it being a locus in the sense of a gathering place for the specifically described presentations which are to be studied by its aid.

4. In Part III, however, I shall make development in terms of 'behavior'; nevertheless, the word 'behavior' will not be permitted to carry forward a dominant 'meaning' of its own, but will be required to gain its specification through expanded observation under explicit postulatory control.

AID TO ANALYSIS

This figure is to be taken as a linguistic-scientific device, and not as an exhibit of disjunctive factual classification. The order in which the aspectual lines appear has no significance, since each is aspectual with respect to all the others.



* A congress of physicists and biologists, placed and dated at Science Hall, December 26-30, 1932.

The locus L is that of Language; on it we assemble the words used at the congress (or, at need, the phrases, propositions, and theories, as word-systems), indicating them as W_1 , W_2 , etc.

The locus K is that of Knowledge. We here separate for attention systems of meanings in parts or whole, as, for example, sciences or any other presentations when inspected with respect to E and F, in terms of knowledge rather than of language. On this locus, then, is gathered all that we call scientific fact, to which we shall give special attention under the name SF; however, the locus likewise must provide for all else that comes before us in the form of knowledge.

The locus E is that of the experiencing biologists and physicists in assembly. Whatever 'physical' or 'psychical' or other characterizations may be assigned these scientists, it is specifically their 'experiencing' which here is singled out for attention. To this and to the scientists as 'experiencers' we assign date and place—not neglecting, however, to note that date and place apply likewise to the other aspects, and also that this, our immediate terrain, forms a portion of much wider surfaces. As P_1 , P_2 , etc., we indicate the various individual scientists in attendance, taking them neither with any assumption of their full personal separateness nor with any assumption that they are 'parts' of some greater 'whole,' but merely letting the record show the observable differences, the observable system, and the 'differences in system' that are before us.

For the aspect of Fact I introduce two lines, corresponding to two types of attitude and activity which our observation and analysis reveals as present in the congress. The heavy line to the left, F(b), that of 'brute' or 'conventional' fact, I here present as an 'aspect' of the situations studied. The justification for this treatment will

5. In the use of the word 'brute' I am drawing upon Poincaré's well-known distinction between '*faits bruts et faits scientifiques*,' using the word, however, merely for convenience in naming, without further specialized or derogatory implication.

be one of the main issues we have to face. 'Brute fact' is presented thus, even though in its own terms it is itself an assertion of compartmental substantiality of fact as opposed to all aspectual treatment. I allot it the heavy line of the diagram to bring out its typical assertiveness in this respect, and not at all by way of expressing my own view as to its authority or importance. In place of the name 'brute fact' one may read 'bare fact,' 'immediate fact,' 'raw material,' or 'empirical as actual,' using whatever manner of stress one wishes; or one may stress primarily its appearance in conventional authority. Whether or not its factual 'immediacy' is really immediate or instead imaginative, and whether its convention is by dogma, custom, or nature, are questions which have been frequent subjects of philosophical disputation in older days and which still survive; however, no problems of these forms arise in the present investigation, where we have only to accept and present the phenomena as our surface explorations show them. On the line F(b) as locus we assemble whatever specimens we find of this type of presentation of 'fact,' as BF₁, BF₂, etc.

The second aspect line for Fact which we have to introduce is the dotted line to the right, F(a). This is the locus of actuality, appearing as the goal of experiment and science and language and knowledge. The dotted line is employed to express this value of progression, in contrast with the immediate assertiveness of the heavy line F(b).

The arrow to the right, marked SE, is indicative of the trend of scientific or, as it has elsewhere been called,*

6. See my *Linguistic Analysis of Mathematics*, especially chapter XIII, "Semantic Analysis." I desire now, however, to abandon the use of the word 'semantic,' so far as it applies to my own development. Too many complications in the use of the term are in sight. In addition to its use in other fields of scientific inquiry, Leon Chwistek has fully established his claim to it for his mathematical foundation theory, and Count Alfred Korzybski in his book *Science and Sanity*, 1933, has outlined a system of "General Semantics" to which he proposes to give much further development.

semantic development of language, knowledge, and fact. The arrow to the left, AE, is indicative of specific connection of specific word to specific fact in the construction F(b). It is double-pointed in virtue of its one-to-one purport. It may be read, if one wishes, in terms of the Aristotelian canon of identity; I prefer to name it, on a somewhat wider basis, the 'Aristotelian Effect,' to bring out a characteristic that is prominent in the inspection, over long historic periods,⁸ of all the language of practical life, of preliminary scientific statement, and of logical theory. The Aristotelian Effect, AE, and the Scientific Effect, SE, are thus brought into sharp contrast.⁹

The presence of the two lines, F(b) and F(a), and of the two connections, AE and SE, in the diagram must not be taken as raising the number of aspects we are considering from four to five. The two lines are, instead, to be read as contenders for the place of 'Aspect F,' each being prepared to reduce the other to its terms. If the diagram could be made three-dimensional, so that E, L, and K could be read as connected with F(b) in one dimension and with F(a) in another, it perhaps might have better symbolic form and obviate possible misunderstandings. We could, similarly, introduce a second K line between the lines E

7. The use of the word 'Aristotelian' of course must be understood as referring, not at all to Aristotle's philosophical vision, but to the linguistic-logical construction with which his name has been identified for many centuries. Fritz Mauthner is the great leader in the inquiry into the degeneration of the Aristotelian linguistic procedure. Korzybski (*op. cit.*) has developed a "Non-Aristotelian System."

8. As is well known, there are primitive languages, many religious systems, and various specialized linguistic constructions in which this Aristotelian Effect is not a dominant characteristic.

9. It will be noted that, while the BF are given locus on the line F(b), the SF are studied, not as on the locus F(a), but instead on the K line. A schematic objection may be raised, of course, but not wisely till one is sure of his schema. In surface survey the implication that we find given to the term 'scientific fact' is that of knowledge; lacking any better terminological devices, I make the preliminary survey on the K line.

and F(b) to represent either a 'conventionally practical' or a 'logical' construction of Knowledge, appropriate to F(b); such a line we might style K(b). We might go still further and substitute an additional L line, or still further and present two diagrams, each with its own E line as well as its own L, K, and F lines. Should we take this last step we should find that our second diagram had ceased altogether to be analytic or 'aspectual' and had become 'compartmental' or dogmatically 'factual.' It would then represent *in toto* just one F(b) line in an aspectual diagram, much as the aspectual diagram itself, as has been said above, is a presentation upon its own locus, L.

For our present purposes we have the necessary materials of analysis best displayed in the diagram as it stands. We have to the right an exhibit of action and development, with experience and language and knowledge progressing towards the fullest factual presentations and interpretations. To the left we have the lines F(b), E, and L purporting to be so bound that *sharp* experience by the use of ultimately *rigid* words yields *hard* facts—an essentially static presentation which is subject, indeed, to incidental writhings, but not in the sense of full and continuing growth.¹⁰ Under these contrasted inspections the clock time and the geographical space employed for the specification of aspect E appear as rigid frames in the construction of the left-hand part of the diagram, while in the right-hand constructions they must appear in the full procedures of experience, language, knowledge, and fact.

Let us now take W₁ as some word actively used in the proceedings of the congress, such as atom, cell, electron, or chromosome, these being among the firmest and most definite employed by the respective scientists. The lines from W₁ to the various P's upon the E locus represent the

10. One might express the contrast between the BF and the SF by saying that the former tend to assert spatial or quasi-spatial 'existence,' with recognized 'successions' but without full durational presentation, while the latter are before us in the full durational form.

variations of the W_i with respect to these P 's: variations which we everywhere find, no matter how firm a place any W may hold in the common vocabularies of the P 's. These lines do not stand for 'relations'¹¹ in any technical sense, nor for any mere individual oddities or peculiarities; they are activities, human behaviors, directly seen. By general agreement the maximum linguistic 'sameness' for all the P 's resides in their mathematical formulations, but these, under close analysis, are in no way cut off from the general characteristics of language, and they stand, with respect to this latter, not as a class apart, but as part and parcel.¹² Such words as cell and chromosome are well organized in a language of visual reference. Such words as atom and electron, though sub-microscopic in reference, are held in systems of measurement and in constructions of visibility, even though difficult problems involving the characteristics of visibility itself still remain for solution. Nevertheless we have no justification for assuming that the lines from any W to different P 's may be taken as completely or 'geometrically' coinciding in all their values.

From observation we may be sure of one thing: that at the end of the five days of sessions of the congress the words that have been prominently before its attention will no longer be 'precisely the same' scientifically as at the beginning. There has been progress; that was what the congress was for, and if no really appreciable progress had been secured, then the congress in the opinion of its members would rank as dead, as a failure, as not worthy at all of its name. Let us now observe such progress across the lines further to the right—those for the aspects of Knowledge and Fact. We must observe it under the form of time; by that we shall not understand the rigid calendar time of the dating of the congress, and of procedure in

11. 'Relation' is a treacherous word which rarely appears in the text, unless by inadvertence in some passage in which the merest of incidental connective situations is indicated. For an appraisal of words of this type, see the concluding paragraphs of chapter XXVII.

12. See *Linguistic Analysis of Mathematics*, Part II.

general to the left, but growth time, 'behavioral space-time.' We may watch the lines from the P's through W_1 extending onwards to regions of closer and closer approximation and organization: regions which we shall say are those of Knowledge, and in which we may identify the reference or meaning of the W_1 as scientific fact, SF_1 . We shall find here in the 'scientific fact' exactly that conceptual and operational 'haze' which Bridgman has exhibited in his studies." The extent of this region of 'haze' is indicated on the diagram by the breaking of the K line where the SF_1 , SF_2 , etc., appear as specifications within knowledge. Still further to the right, the directive arrow, SE, points onward towards the establishment, through scientific fact, of actuality in the sense $F(a)$. And here, as the lines across E, L, and K come to focus upon $F(a)$, I introduce dotted connective lines to symbolize that each of these lines, SE, is organized in system with the other lines, SE, across the full field $F(a)$.

If the above is the report we must make of procedure to the right from E and L, what, next, have we to say of the procedures to the left? We could take for examination the same words we have used before, such words as cell or atom. However, it was in their quality of firmness for the construction we were examining that those particular words were introduced, and it should be similarly by tests of firmness for the construction we are next to examine that selections should be made for it. Here we find such words as coal, pound, dog, heart-beat, rock, or bread best suited to the needs. We note, as before, variations in the connective lines between any W and the P's. So far as the reports of observation go, what we find in the lines $P_1W_1P_1$ and $W_1P_1W_2$ is 'the same' with respect to the procedures to the left as it was with respect to the procedures to the right. Indeed we may well believe that in such lines we have the most dependable 'raw materials' that can be found for studies of this type. It is this very 'sameness' of observable situation here, in first-hand report, that makes pos-

sible the use of a single diagram for both directions of examination.

In the procedures to the left, however, instead of finding these lines prolonging themselves in ever greater approximation to precision towards a goal $F(a)$ which, even though far off, is always coming closer, we find them striking a rough average, and plumping precipitately upon facts BF assembled upon the locus $F(b)$, so that for each word, taken as well-established and valid, there is required its immediate one-to-one connection with the specific fact of its reference. This we represent by the double arrow, AE . This averaging process for all the lines of W_i , or of W_j , etc., presumably requires the hypothesis of an 'average' or 'normal' or 'typical' person; his being required in the procedure is indicated by the P_i placed at the crossing of the E line with each line AE . This typical person is an hypothesis, but hardly more so than the serially numbered P 's in their usual conventional renderings. This line AE we have called the line of the Aristotelian Effect in language, preferring to treat the canon of identity as one of the specializations of this more general effect. It is the line of the practical-life-and-language construction which has maintained itself over long periods of history, but which is to be taken by us solely in terms of its observable values, whatever they may be in behavioral space-time. It is in the development and interpretation of the situations represented in the left-hand construction of the diagram by lines of the types P_iW_i , P_iBF_i , and AE that the current conventional psychologies, logic, and epistemologies flourish; and any reader I may have for this essay will be so fully acquainted with such discussions that I need do no more than mention them to enable him to supplement or reorganize the diagram as he may deem necessary.

We now have in the analysis of the diagram two forms of presentation which are alike (or 'the same' in the conventional understanding of the words) in their PW lines,

connecting the E and L aspects. These two forms diverge widely, however, in their F lines, and a similar differentiation would be evident for their K lines. Should we introduce a special K line for the procedures to the left, calling it K(b) as has been suggested, we should probably have to treat it as 'factually' present only at the points of its intersection with the AE lines. This very statement of its probable form of appearance in the diagram exhibits its self-contradiction but is apparently expressive of the situation. We might perhaps say, alternatively, that such a K(b) line would *be* 'the AE lines themselves.' Either form of statement serves to emphasize a discrete and rigid 'existence' as the control and purport of the K(b) line.

Of the two F lines, the one to the left, F(b), offers sharp, hard, existent facts. System, organization, 'relation' is indeed allotted them, but it is given them as if 'from without' or 'from beyond.' The typical construction is to effect a certain consolidation or quasi-consolidation of the E and L lines *in* 'thought' and *through* 'concepts,' and in this way, which is 'external' with respect to the BF, to give these latter their 'system.' The special use of the word 'relation' in these procedures is significant; in the course of the operation we may note also the reduction of the presentations on the L line, and in a peculiar way those of the E line as well, to the status of 'facts' of the form BF.

Strikingly different is the procedure towards the line F(a). Here, so far as observation and inference serve us, we have no indication whatever of isolated situations BF. Our SF's, or scientific facts, become ever sharper, more clearly defined, more precise—this to a degree never attained by any BF—yet their very precision is before us only in the full system F(a). We may regard ourselves as having before us a linguistic spectrum, with fine structure and ever finer becoming known to us, and with all its factual values lying in the developing organization. Such organization has been evident in all stages of the procedure, whether that of the E, the L, the K, or the F aspects, and the introduction of 'organized' or 'organizing' factors as a 'something additional' is nowhere necessary.

Our P's have appeared to us in system. Our W's are most unquestionably in system—we took this as self-evident when we introduced them. Without the combined system of the P's and W's we should have no starting point for any investigation or enterprise. Our SF's are so much in system that no one of them can be given intelligible statement or be presented in any way except as in system with the others. Our F(a) must then be forecast as lying within the same systemic trend."

We permit, now, the F(b) construction itself to criticize and interpret the rival procedures to the right in the intention SE. The F(b) construction will insist on reducing these latter to linguistic mechanisms. It will interpret the E presentations as themselves types of BF. It will hope for a solution satisfactory to itself through some subtle new variation of the terms of the age-old paradoxes.

Similarly we may permit the procedures F(a) to give their own interpretation of the import of the construction F(b). They will reduce this latter in terms of the aspect L. They make the F(b) line itself hypothetical, postulational, 'aspectual.' They can point to the ever-present vacillations of the lines PWP as best evidence of this. They 'date' the F(b) line in the social history of knowledge. They allow it its full practical importance. They give it the status of a practical short-cut, yet recognize in it all the deficiencies of short-cuts to which, prematurely, dogmatic values are given. They will grant readily any possibilities it may have of resurgence and of the overthrow of all aspectual presentations, however much they may deny its claims to authority today. They point out that the E aspects are as fully involved in the L and K procedures as are any BF. They point to the very Fact-Lan-

14. It may be remarked that the radical separation of philosophical from scientific studies appears in the construction F(b), but vanishes in the construction F(a). For this latter the full analysis in terms of all four aspects must proceed across the E presentations as much as across any others. The radical separation vanishes, of course, in hypothesis and in postulation for work, but not in any dogmatic assertion as to the realities.

guage-Mind splits as themselves arising in linguistic guise. They may assert, further, that were it not for the very 'haze' in the K line of our own or any other generation, the F(b) construction itself, with its AE line of control, would not arise in assertion.

It would, of course, be desirable to examine many different types and groups of words under the analysis of the diagram. It is only by the most extended studies that such a thesis as we have here may hope to establish itself. The W_i presentation that we insert on our L locus might be a 'relation' or other connective, or a term for activity. It might stand for a complex group of words, or for a 'theory.' It might be an emotional expression, or an imperative. We shall confine ourselves to a comment on the single word 'existence.' Read in the procedures to the right, this word will manifestly have very different values than when read in the procedures to the left. Along the K line as we have it before us in our own generation or may anticipate it for the immediately coming generations, 'existence' will have a 'haze' which can be reduced or minimized only by employing a multiplicity of existential words, each built up in its own connective linguistic medium. What its full value in the end may be, no one working in the intention SE in the present generation would presume to say, however he may occupy himself with the question as an interesting employment for his leisure hours. The values of the word 'existence' to the left demand, on the contrary, the greatest immediate firmness that can be given them. They are disturbing and troublesome. And notice this about them: 'Existence,' whatever else it may be, is present before us through a word. The whole existential situation must be verbally developed. The word 'existence' must acquire consistencies of meaning in system with other words if it is to be respectable at all, even among words. When these verbal consistencies are sought, the searcher finds himself far out along the course, SE, and sacrificing more and more the values AE. To handle such 'existence' categorically requires an assertion from the locus E; this assertion, carefully inspected, is found to

take the form: "I, John Doe, today in my particular limited experience and generation, know as much as any one may ever know of that which is basic and firm, however future generations may perhaps elaborate the details." Without that assertion the procedure fails altogether. With it, its appraisal is all too easy.

The preceding analysis of the functional organization of Language and Knowledge is, I am aware, harsh, and for the present perhaps difficult to hold in close survey. Other writers have depicted the situations before us with vividness, but our need here is to attain a firm grasp of the outlines of construction. Many obstacles exist to ready understanding, and to the most important of these much attention will later be given. Among them are the conventional reliance on the 'senses' as contact-makers with the factual world, the interpolation of substantive 'thought' as the constructor of knowledge, and more generally the radical disjunction of 'person' from 'thing.' On one hand we find constructions of knowledge in which 'intuition' predominates, and on the other, constructions in which all 'knowledge' values are in effect cancelled and in which 'fact' is assumed to be before us in its own right. Our dependence hereafter will not be upon the argumentative overthrow of any of these alternative views, but rather upon the results we can obtain in the way of definite observation and description of human behaviors under the postulation we are erecting.

The present status of working science with respect to the alternative frames of fact, $F(b)$ and $F(a)$, is somewhat as follows: The scientists start with a thoroughly matter-of-fact construction of the type $F(b)$ for things in general. They proceed to examine the detached and 'concrete' BF's. In the course of their work, they find everywhere the verbal representatives of these BF's breaking down in their hands. Where a specific fracture shows itself, they no longer have hesitancy in admitting it. Where 'ether,' patterned on the old model of 'matter' and taken

as a carrier of 'fact,' failed them, they soon became willing to see in it only "the subject of the verb 'to undulate,'" however firm their F(b) constructions of world facts remained in other fields. With the advent of the newer and more violent conflicts of corpuscle and wave they are for the most part ready to go forward in the intention SE, regardless of the old AE, wherever experience (in experiment) and language (in mathematics) may require.¹⁵ In the biological sciences the process has not gone so far. The more extreme geneticists still demand a gene of the BF type, and back of the gene, if fate so wills, still further BF. But that is not all of genetics, for such studies contain functional values and expressions that tend ever more fully to types SE.

Our interpretation here is that scientific progress itself destroys the old AE construction, not merely as concerns the 'physical,' but equally well as concerns the 'psychical' phases of such construction. It is the rankest of dogmas to hold that the F(a) will be in the end but a reproduction, a portrait, of the details of the F(b), or of such F(b) as the dogmatist chos for his purposes. The F(a) is more than that. It is growth. And the growth is in language, experience, knowledge, and fact, all together. The dog that once was 'dog' or 'a dog' is now a presentation in a long line of evolution from which he must arbitrarily be dissociated when he is given separate standing as fact for or as 'himself.' The full statement of 'fact' cannot compress itself within the years of a dog's life, but must run backwards and forwards genetically, with the genetic aspects present experientially and experimentally in the present dog-life before us. And the dog connects into wolf and into other mammalian life, and so outwards and on-wards in the ranges of knowledge. Even the dog's margins of physical body as we 'see' him before us today have disintegrated; and we know that radiation, not merely as light waves, but as much else, is intimate aspect and phase

15. Compare the illuminating discussion by W. F. G. Swann, *Science*, Jan. 29, 1932, under the title "Reality in Physics."

and component of his very living and material endurance.

It is thus that the paradoxes of universal and particular, once so dominant in the discussions of the world, arise only when the materials of discussion are presented in the form F(b). Scientific development, not merely in the form of genus and species, but in far wider ranges, has shattered them and has brought us to the day when they can definitively be given their place and date and assigned their limitations in the history of human knowledge.

The answers, then, that we have to make to the questions posited at the beginning of this essay are as follows:

Language and Knowledge alike must be taken as in action, as activity or behavior or process, as life, as whatever word may prove to be significantly useful for their description.

Neither Language nor Knowledge, for the more thorough purposes of inquiry, may be taken as 'existent' without the other. Neither may be hypostatized. Neither may be taken as forever substantive with respect to the the other taken as forever its instrument.

Nowhere may either Language or Knowledge be found without the other as aspect through all its course, however well either may be frankly and explicitly separated for partial and specific study.

The activity which they are is activity of men—not of separate men as 'bare facts,' nor any more of individual men as subordinated in some 'greater whole,' but of men as we observe them factually organized in process in a world of Fact—of men in society, with that society itself before us as a factual determination by way of language and knowledge along the lines of scientific advance.

And to this we may add: If Language and Knowledge may not be hypostatized, neither may Experience nor Fact; and no more may some special representative of either, such as Thought in the field of Experience. That which is called Thought is in L and K and F as much as in E, and is both aspect of these and has them among its aspects, however crude our expression for this may be in terms of such language as we as yet control.

XIX. EXPERIENCE AND FACT

Theoretical constructions for knowledge, as has already been remarked, are most often attempted in a counterpoint of Experience and Fact. We have deliberately foregone the conventional advantages of such starting points, and have made our approach by the use of materials of initial description in which factual Experience is found continuously blended with experienced Fact. Proceeding thus, we examined a correlated factor, Language, which compelled our attention to such an extent that we found it necessary to construct our primary postulation in terms of Language and Knowledge.

Despite this marked alteration of stress, our inquiry has at no point presumed to extend beyond the ranges of the more familiar presentations; it has been aspectual throughout; the Language and the Knowledge that we have considered have been at every point experiential and factual presentations.

It is now desirable to transfer our attention briefly to the more familiar starting points of construction: to Experience, that is, and to Fact. What will be their status if, instead of being taken each in its own isolation, they are taken aspectually within Language and Knowledge? Can they, in the actual working acquaintance the world has of them, tolerate any such postulation?

If we begin with Experience, and ask it to step forward and tell us whether the accommodations allotted to it in our postulation are adequate, we are at once faced with a serious difficulty. Busy claimants for recognition appear from all directions, quarreling among themselves, and among them all we can find no safely representative spokesman. John Doe presents himself with his assertive immediacy of feeling, sensing, perceiving, knowing, and much

else; but we are far too well acquainted with the way he is himself 'placed' and 'dated' to permit him to bluster his way to the front. Then come all the magnificoes of the old 'mind-language.' Their raiment is varied and attractive, but we are not conducting a style show—at least not one of ancestral spectacle. In no better standing are the 'mentaloid' and 'neo-mentalistic' modernists. From the laboratories come many aspirant oddities, but their credentials are too full of 'ifs' and 'buts' to entitle them to the recognition which they seek.

Lacking a representative spokesman, we cannot obtain in the construction of this chapter a separate display for Experience in its own asserted right; we can give it full value under our postulation, but for the rest must await its own clarification of its wider claims. Concerning one of its manifestations, however, a word of warning should be given. The case is that of 'sensation,' in the instance of a specific 'sensing' regarded as the immediate guarantor of a specific 'fact.' We have here something which, in any careful modern construction, cannot possibly be elevated to the status of legitimate representative of experience but which nevertheless lurks widely in the linguistic underbrush, tearing its prey with toxic claw. It has John Doe in its grip; the proponents of an existent 'outer' or 'extrapolated' universe act under its terror. If I should pause at every step in this chapter to keep a light turned upon its various manifestations I should do little else. I therefore warn, and proceed as though the warning were heeded. I can do this, however, only because in the later chapters of this book there will be offered, in conformity with our general postulation, much construction of the phenomena of Experience, inclusive of sensation in its full evolutionary setting as an aspect of behavior.'

If, in place of Experience, we ask Fact to step forward and pass judgment, we find an entirely different situation.

1. See especially chapter XXVI.

Modern science presents for our consideration a great cosmos, and asks us to regard it as fixed and certain Fact; this cosmos has enormous extensions of space and enormous durations of time; we, its observers, are the tiniest of mites within it; we are 'parts' of it, yet such extremely small parts, that it is paraded before as as 'external' to us; as over against it our function is that of observer or reporter.

Throughout our endeavor to secure adequate postulation for Knowledge and Fact, we were open to continuous bombardment from the many batteries whose guns are loaded with 'facts'—with 'facts' which purport to be separate, isolated, each insistent on acceptance in its own right. We have been bullet-proof against this bombardment, since such missiles have been found to disintegrate in flight well before they can register hits. In what security, however, do our conclusions stand when we confront this great factual fortress of modern science—this cosmos of space and time and matter?

We may call this cosmos of modern science by a special name, the tellurian-sidereal. Such a name brings out its spatial and temporal extensions and serves to hold it well apart from the many cosmologies that men have built in the past and will doubtless continue to build in the future. Characteristic of it is that through man's careful study of his environmental spaces it has been expanded—one may almost say in their image—into a spherical earth, a compactly organized solar system, a galactic universe, and the system of millions of such universes of which our galaxy is one. Similarly through man's careful study of his environmental times it has been given first its historical, then its anthropological and geological ages, and finally its enormous sidereal durations. This is the cosmos of two centuries of Newtonian construction, with its framework of absolute space and absolute time and its related doctrines of the specialized conservations, from those of mass and momentum onwards.

If the tellurian-sidereal cosmos is taken positively and finally as the hardest of hard Fact, so that in effect it provides a strait-jacket for all knowledge, then the construction of men and of knowledge and of language which I have endeavored to make in the preceding chapter will be rejected out of hand; then also, as it will appear later, no way remains open for the intensive investigation of the complex phenomena of man's life in society, an investigation for which there is so much need, and towards which there is today so much pressure.² If, however, the tellurian-sidereal cosmos can be accepted and employed in all its working values, but without such dogmatic affirmation as certain Fact, then the way is open for a coherently developed co-operative procedure in which, on the one side, science and its cosmology appear as the work of men, and on the other, men and their knowledge appear as a field for legitimate scientific research.

The issues which we shall have here to consider with respect to this cosmos do not concern its scientific value, either in the detail or in the plan of its systematization. This value is admitted; it is the backbone of all our physical knowledge and the conditioning structure of all our other knowledge; it will long so continue. The question that concerns us has solely to do with the manner of 'externalization' of the cosmos, with its worship as extrapolated and fixated over against man, and as the rigid control, in its *own* stresses of formulation and report, for all his other knowledge. Can the tellurian-sidereal cosmos, as we today know it, claim position as Fact of the type F(b) in the symbolism of the preceding chapter, or has it rather even today the position of Fact of the type F(a)? Are the conditions of our knowing it characteristic of all of its values beyond those of its specialized physical application and development?

2. Compare the discussion of the alternative postulates of uniformity of nature and uniformity of knowledge in chapter XXV.

We have here to show that the extrapolated cosmos, the locus of human activity and the background of inquiry for all of the modern sciences of nature, is the 'local view' of the men who are 'within' it and 'part' of it. It is Fact under the qualification 'as seen from a local point of view.' Our factual cosmos itself is before us as arising from the 'reactions' to it of the men who have been evolved within it. The very insistence upon its 'actuality' is before us in this way. In the course of their history men have come to orient themselves towards a cosmos, to recognize and 'know' it, and to establish it as the locus of themselves and of their reactions. The cosmos in which they frame their reactions is the cosmos as viewed from their reacting position—from the 'human' position—and is itself qualified by all that that implies.

To apply the word 'local' in this way is manifestly to adapt a phrasing from the 'local time' of the physics of relativity. The local times of relativity do not lose any physical 'actuality' in being described as 'local.' Their construction in that form merely implies that no 'master time' is introduced into the description to rule over the 'local' times. All times are 'local.' The inquiries concerning the various local times run to ranges and techniques, and above all, to transformations from one local time into another without loss of factual standing for any of them. Let us thus interpret our attitude towards any 'local view' which man may take of the universe, and let us not be premature or dogmatic in our definition of 'man' when we make the statement. It is not a 'view' detached from a 'universe'; it is rather 'universe-locally-viewed,' where the only specific service rendered by the linguistic component 'universe' is to indicate fairly well that the view is given its widest range.

Can the man of science object to this description of his cosmos as a 'local' view in this sense? Hardly, if he is willing to be cold-minded about it. What is it that he himself does? He sets up a great factually extended world of sidereal and solar systems, of earth geologically and

geographically inspected, of animals in evolution, and of man at a 'high point' of evolution. If he thus honestly and fully locates man in the universe, how else can he proceed than to regard all that man achieves and constructs as 'local' within that world, even to his very construction of it as cosmology and to his very presentation of it as cosmos? Difficulty arises only when the man taken as 'high point' is taken so very high that he protrudes from the cosmos of his location. This happens when he is invested with the older magics of 'soul' or 'mind,' and equally when he is allotted the more modern but no less 'magical' qualities that appear as place-holding substitutes for the older terms. When, however, a scientist goes that far, he at once passes out of his true scientific field and becomes ripe for any absolutism of dogma. On the other hand, the strictly observant' scientist, who earnestly and steadily has labored to frame man in the moments of time and space he occupies, should be the last to gainsay a full characterization of all of man's participations as 'local' in the time and space of his cosmos.

It was as 'ordering' of fact, not as massive factuality, that cosmos first appeared in history. A distinction between cosmos and cosmology is often made as if cosmos could be established as certain and basic Fact to the far left-hand of Knowledge, while cosmology could be drummed off to the far right-hand as mere play of speculation around the margins of Fact. Such manner of inspection, however, is near-sighted and limited. It stands valid, neither for any wide inspection of knowledge and science, nor for any thorough postulation in the aid of closer inquiries into factuality.

If we appraise our tellurian-sidereal cosmos and cosmology with respect to its stages and gradations, whether historical or contemporary, we can establish it in three steps. Two of these, under close inspection, are manifestly

3. I employ here Titchener's competent phrase as he developed it in his *Systematic Psychology: Prolegomena*, chapter I.

behavioral, while only one, and that a transitional stage, is vehement in its asserted extrapolation. In remote times, what is now our cosmos was a form of speculation, of human reaction, imaginative and interpretative. In modern times, in the hands of our most widely curious scientists, especially in the hands of the sidereal physicists, it is equally behavioral: it is an affair of intricate problems of telescope, spectroscope, and mathematical computation. Only in that certain intermediate stage in time and place which is occupied by the man in the street, or by the physicist or mathematician who abandons his techniques proper to indulge in holiday promenade, does the cosmos insist upon being solid and substantial Fact. It is 'in the street,' where the speculations have died down and where the intricacies of research are unknown or ignored, that 'the world' insists upon being regarded simply as 'factual.'

4. This 'man in the street' is the John Doe to whom reference was made at the beginning of this chapter. John Doe will strongly object to the substitution of any 'postulate' in place of his 'real' world. He is confident he himself can provide a backbone of security for such a real world, and he is thus inclined to regard a Tellurian-Sidereal cosmos as his very own, without really having paid any close attention to it. He is, however, as much aloof from, and antagonistic to, the Cosmos of science, as to our present form of postulation. He is wholly untouched by the more exciting and complex phases of the great scientific adventure. His view is that small, prim, assertive, and tenacious view embodied in our practical everyday language, even to the extent of framing the special grammar of that language—so that we are not even able to speak of it without entangling ourselves in its phraseology to the point of seeming contradiction. It runs thus: "I am John Doe. This is a chair, that a table. I touch them, feel them, see them. I talk. I have knowledge of them. You can't deny it; and if you admit it, you must admit it 'yes' or 'no.' Here is the beginning and end of all knowledge." What John Doe does is to take his 'senses' as 'Item No. 1' in the universe—or perhaps we should say as 'Items Nos. 1 to 5,' for he sometimes counts up to five in this matter, but rarely higher; and he soundly believes in the 'reality' of his numerical discriminations. He takes them thus, ignorant or heedless of their functional evolution and operation, or grossly set to ignore it. He takes them thus, out of their cosmic setting and placed rigidly over against the cosmos as its test. It is his 'local' view—which, I repeat, he would not have at all, if it

The general nature of these transitions into and out of extrapolation could be easily exhibited, if it were worth while to allot the necessary number of pages to it at this point. The materials of the exhibit are analytically developed elsewhere.⁵ Consider an early culture of man, boy, dog, rabbit, forest, field, river, fish, fire, frying-pan, bow and arrows, pain, pleasure, sun, moon, stars, and rain. All the 'facts' would be on hand in the most 'matter-of-fact' way—feelings, words, and 'things' alike. We should soon observe, however, that these 'facts' did not remain satisfied with themselves as 'the facts.' The world becomes peopled with spirits, spooks and gods, with Souls and God. It becomes framed in geography, history, and

had not been built up for him in tens and perhaps hundreds of thousands of years of communicative language—but he makes it absolute. "Man," says John Doe, in effect, "is the measure of all things"; but he says it in sharp assumption that not only the 'man' and the 'things,' but above all the 'measuring' procedures, are within his personal and immediate competence in knowledge. That we all use the view of John Doe in our daily practical affairs, and that we all carry much of John Doe into our theories and studies, is certain. But it is equally certain that we are forever breaking down this local view each day of our lives in this respect or in that, and for this purpose or for that, whether we fully recognize what we are doing, or not. The issue for John Doe's 'local' view is, then, merely one as to how far we must push its analysis or bring about its disintegration for any special studies we may have, or for the more general studies that press upon us. The difficulty now is that John Doe must cease to be absolute, cease even to keep a small consolatory fragment of absoluteness in reserve, and must yield himself to be just one 'local' in a world of 'locals.' Driven from one defense after another, there comes a time when there is nothing left for him except to be sullen, and that is exactly the mood in which we are apt to find him; and it is only because of this mood, and because of its assertive interference with the analysis we are forced to make, that I take him into account here at all. His view is that the core of knowledge, in the last resort, must be the summation of the cores of all the Johns. Our view is that the cores themselves, if cores there be, pass into function with all else of knowledge; and that, once the analysis has started, it has no term that John, by his dictum, can fix.

5. See throughout Part III.

astronomy. It develops the anthropology of its men, and reconstructs their animal origins in a mammalian evolution that runs backwards into long geological times. It comes to see many of the behaviors of its men in frames it calls cultural rather than personal. It secures standardizations of many occurrences in mechanics. From the interpretation of masses, it proceeds to interpretation in the mathematics of radiation. Light-years appear as measuring rods. Gravitation bends rays. Galaxies multiply. Nebulae flee with speeds threatening to approximate the speed of all speeds, that of light. Man, dog, and words, rabbit, fish, and rock, all come to this.

A cosmos that incorporates 'the men who know it' is manifestly under the obligation to include a definite statement of those men—to provide a coherent framework for the interpretation of them within it. This the tellurian-sidereal cosmos has never done; it offers sanguine expectation or dogma, but never direct construction. When taken as fact of the type F(b), extrapolated and fixated in its own right, it cannot do it; the long protracted efforts to extend it and their total failure up to date are the reasonable justification for so strong a statement. Endless intricacies of interconnection between the physical phenomena and the phenomena of the psychologies and sociologies can be shown, but no coherent construction across the borderlines.

Observe that direct physical inquiry in its most advanced forms has come to permit the greatest freedom of functional transformation between its various particulate 'facts' so far as they lie within its extrapolated field; thermodynamics, now in the soundest scientific standing, is one great illustration, and the newer theories of corpuscle and wave bear witness by their very presence. Such inquiry permits the physical 'body' of man, taken as extrapolated fact, to be thus functionally interpreted and restated as occasion arises. But it has made no step in advance towards interpretation in the functional form across

those fields of inquiry in which the behavioral participations of men are most significant. It regards Fact itself—all of its cosmos—as extrapolated and fixated in opposition to the behaviors of the very men whose bodies are among its particulate 'facts,' and here is the strongest evidence for the need of just such further analysis as that in which we have been engaged. This defect of failing directly to facilitate social and psychological inquiry is so well known that it may be passed over here, more especially since detailed attention will be given it in later chapters when necessity requires that we justify the establishment of a special division of research and technique in science, a division to be called behavioral.

Another limitation to any claim of complete factual fixation for this cosmos is to be found in the incoherences which the cosmos shows in many of its more deeply probed regions of inquiry. No longer can the physicist say with his old assurance that, when he measures, he measures extrapolated fact. He is compelled to recognize the conditional status of his measuring of the cosmos; the more highly refined his measurements, the more pronounced this conditioning shows itself to be. Velocities are among the essential phenomena of inquiry in the cosmos, and velocities are comparisons. Yet physicists have been compelled to accept one certain velocity, that of light, as fixed and maximum velocity, thus making it something that is a velocity and is not a velocity at one and the same time.⁶ Physics was confident enough in dealing with 'matter' until it was found that not even a modified 'matter'—the ether—would serve it properly as the seat of light; now it peers

6. This fusion of length and time in a special phenomenon named 'c' is, of course, a critical point in all modern physical construction. Most generally in terms of the dimensional symbols, M, L, and T, one may perhaps say that if these preserve their status as 'primary' in such way that all other dimensional expressions are 'derivative,' then fact of the type F(b) will still be holding its scientific authority; while otherwise, it will not.

at corpuscle and ray, winking in and out in its experiments. Physics has found its 'extrapolated' universe showing signs of expansions and contractions, and it has been compelled to consider the possibilities that the contractions will land in nothing at a 'point,' or that the expansions will land in nothing at infinity. Hope it has, but that is all, of calculating some 'limit' to such expansions and contractions whereby it may avoid situations so awkward to 'extrapolated' Fact. Its cosmos is indeed shot through with vanishing points in many regions of its observation.' In the judgment of the most acute critic of its own procedures as seen from within its own professional field, the greatest achievement of physics in modern times has been rather the breaking down of a corrupting 'concept' than primarily an expansion of knowledge on the basis of extrapolated fact.⁵

All of this is but a surface description of incoherences as they may be viewed today. Behind them is an issue of much more critical import. The mathematician attacks his problems with the privilege and duty of discovering all of the 'possibles' of construction, given certain elements and arrangements of initial assumption. The physicist makes his interpretations with the reservation and limitation that they are conditional to the present status of his observation and experiment, and subject to whatever modifications his further observation and experiment may require. The physicist uses his current presentation of a tellurian-sidereal factual cosmology legitimately as a guide to his attack on the very widest problems he finds, but he

7. See H. N. Russell, "The Constitution of the Stars," *Science*, Jan. 20, 1933, p. 71 *et al.* While stars of intermediate masses may contract to dwarfs and attain stability, the greatest giants secure mathematical formulations which indicate that their contraction is to proceed without limit. This would take them nicely outside of any cosmos of our experience or knowledge. Perhaps to avoid shocking his readers, or himself, Professor Russell gives a corpuscular reading to his formulas, and suggests a diameter of a few hundred miles for the final state of such stars.

8. P. W. Bridgman, *The Logic of Modern Physics*, pp. 4, 8, 170 *et al.*

does not use it legitimately when he assumes that his final answer will inevitably be in the form of this present specialization. The matter-of-fact frame of the older mechanics and its extensions has been transformed under his hands into a highly sophisticated frame for his subatomic and radiant researches; but by that very token it stands as a wholly naïve frame when it asserts a physical cosmology or cosmos within which physics is rigidly bound. This cosmos, in an assertion of its full factual extrapolation, is not used legitimately when the physicist neglects to give attention to the involvement of his own observations and experiments in processes which do not themselves yield to interpretation under his extrapolated frame. If light-rays are physical 'facts,' and if the physicist's vision is secured in and through such rays, and if his whole frame of construction rests in observability, then these three 'facts' together make 'fact' which may not long be ignored. That the science of physics will form the core of any cosmology is a proposition which we may readily approve; but it is also true that the physics which is even now available as the core of a cosmology and as report on a cosmos has already traveled far beyond the limited form of the extrapolated and fixated 'fact.'

With reiteration and emphasis of all the values that the tellurian-sidereal cosmology has and will continue to have, with full acceptance for all pertinent uses of its radium clock and its sidereal times and spaces, and with unreserved acknowledgment of its practical importance for science, we may still deny its claims when it presents itself as a cosmological strait-jacket within which all other struggling knowledge must be confined. In such cases we may reply that the actual status of the tellurian-sidereal cosmos today is as follows:

1. It is itself an extension of the extrapolated and fixated factuality derivative from simple practical human living.
2. It is in that sense a 'local view' of the universe.

3. It exhibits regions of incoherence in certain crucial presentations, the old infinity and continuity, and the new velocities and vanishing-points.

4. It is aspectually a linguistic construction of communicating men, and is affected by all that language has and is, or that it lacks and is not.

5. It fails to give effective aid to certain wide fields of inquiry which press upon us.

6. Its conventional dominance in the present generation for the most important working procedures of science is no more evidence in favor of any claim it may make to be the permanent frame of knowledge than has been in any past age the conventional dominance of the particular cosmology of that age.

7. When a different 'local view' presents itself, one that arises from the simple situations of human living and shows itself adapted to efficient work of its own in fields of its own, then between the two there should be neither battle to the death nor the expedencies of compromise, but tolerance and co-operation. There should be search for the techniques of transformation under the same spirit of scientific freedom which the older approach has so liberally and generously established for all forms of work within its own immediate frame.

The situation now before us may well be pictured in terms of what has happened in the case of geometrical co-ordinates. The implicit 'origin,' once vaguely placed at one's feet or in one's home land, long ago yielded to an origin at the center of the earth, that to one on the sun, and this again to others, until in the end transformation of spaces and times together became practicable. If beyond, the dimensions of geometry and the dimensional aspects of physics, it now appears that there are dimensions of Factuality itself, then co-ordinates for the study of these dimensional situations may be employed. The use of the one-dimensional Fact—the extrapolated Fact of the old cosmological presentation— remains as legitimate as ever;

provided, however, that it is understood as one dimension within the system of dimensions, and not as some full 'reality' of itself. If two, or four, or no-dimensional studies seem needed, full freedom should be permitted to discover how far they have value in the pursuit of knowledge.

The imperfections and inadequacy of the tellurian-sidereal cosmos in its more dogmatic renderings must never be taken as canceling the power and authority it possesses in its own physical application. To deny it certain of its prerogatives as creed is not to lessen its strength as postulation. It retains all of its technical values, and all of its own hard-won freedom to remodel itself according to its own needs. To place a correlated postulation alongside it for use in behavioral inquiries may indeed actually strengthen the position of the physical cosmology; the hampering effects of dogmatic assertion are eliminated, and power is released for the fruitful work of inquiry.

The correlated postulation that is needed for the progress of the social and physical sciences is, of course, one that must be learned by labor. It will revise itself continuously by ever-repeated experiment, provided only that full freedom for this is granted it. It will claim nothing for itself beyond being another 'local' view, companion to the tellurian-sidereal. It must appear as an expansion of the same simple, practical conditions of human living out of which the construction of extrapolated universes has appeared. It must perform services in regions in which the separately physical cosmology fails to perform them; these services, when actually performed, will be its only justification for its adoption and use. It will be, of course, a construction of and in the language of communicating men; but it will be characterized by the deliberate inquiry it makes into its own linguistic conditioning, and by full recognition of its own status in this respect. Taking Language thus expressly into account, it must with equal thoroughness take Experience into account, and so frame itself as Knowledge.

The tellurian-sidereal cosmos has the great merit—which is indeed its backbone of strength—that it is the only world-view we have which expands ‘inwards’ and ‘outwards’ spatially, and ‘backwards’ and ‘forwards’ temporally, to house all branches of knowledge. Against it, no construction built up in terms of some pin-point ‘mind of a moment’ has any hope whatever for consideration. A companion world-view (linked with the tellurian-sidereal, and not opposed to it) must develop equally in expansions ‘in’ and ‘out’ and ‘backwards’ and ‘forwards.’ Very difficult problems of construction and reconstruction and adaptation must be met in the course of such a development—problems not to be solved casually or quickly.

First to be remarked is that while such a construction must take all four phases—Language, Knowledge, Experience, and Fact—into account, it may not possibly take them as *the* four particular phases it will need. They furnish a good working start, but they do this only as they stand ever ready and free to accept their own transformation. We have acquired them for our use under an inspection which runs across only some few thousand years of social history. We have been able to test their organization by inspecting situations in which we today participate. We have, however, no firm reason for asserting that we know more deeply and truly what we ourselves are doing today than what has been done in the past; the two types of assertion arise in mutuality of interpretation. We must run our construction far backwards from the few thousands years of history which we have used as a base for its consideration, and permit its elements, phases, or aspects to undergo whatever modifications they require or demand.

In such ‘backward’ construction all our materials must be inspected phasally—‘functionally’—with respect to one another. We have adopted this manner of inspection from the most advanced procedures of modern science and have developed it in our special construction across a few thousand years. It is characteristic of that construction; therefore the expansion of that construction must continue to

experiment with it, to see what worth it may prove to have. If we set before ourselves such a series of scientific descriptions as knowing, thinking, talking, sensing, reflexing, inheriting, burning, pulsating, gravitating, and undulating, then our organization must aim towards a functional coherence all the way from the knowings to the undulations. If, for example, we pause at the description 'sensing,' we must read it, not as some capacity assignable mechanistically (*via* the mind-language) to a limited bit of 'matter' (or 'mind') or to a special area of space, but as a functional phenomenon in which 'race' and 'environment' come functionally into account along with 'individual,' and without radically disjunctive oppositions between any of these terms. If we take a special series, as 'sensing-speaking-thinking,' we shall not cut the members apart in radical division upon different levels of 'time' or of 'evolution,' but we shall endeavor to learn what beginnings of 'thinking' there may be in 'sensing,' and what extensions of 'sensing' there may be in 'thinking.' When we arrive at that problem which, as we have repeatedly said, is rapidly becoming critical in physics—namely, the problem of the light-ray as participant both in the observing and in the observed—we shall not find our 'knowing' and our 'undulating' phenomena as inhabitants of separate worlds alien to each other, but rather as sympathetic to mutual interpretation directly in the functional postulutory construction of research.

Where and how in this long 'backward' search, sensation and communication and the specific forms of their organizations differentiate themselves, and which, if any one of them, can be taken as primordial stem, is one of the questions with regard to which guessing is of least worth. Doubtless a sharp differentiation of 'knowing' and 'knowledge' will be recognized as coming at a comparatively late stage. But we shall be involved also in the question as to where and how definitive 'fact' itself differentiates in this cosmos; that is to say, we shall have to elaborate many meanings for the word 'facts' to replace the crude one commonly assumed. Here we already face ranges of meaning

for 'fact' which run, not only from scientific to practical and thence to political and moronic, but also to much more delicate discriminations, some of which already show themselves in sharp forms in investigations into radiation. Such problems of discrimination arise at once if one asks such a question as whether light 'travels' or whether a light-ray, even one with a million light-years of history, can be thought of as starting at all, if its terminus has not already been given⁹—and like questions appear in the statistical laws of physics and in its principle of uncertainty. If we can see that there are such problems and that their solution is vital to all cosmic construction, that is all we need in order to be free to go ahead with cautious work in whatever fields we investigate personally.

If we select for consideration an Alaskan tribe and a totem-pole, it is quite true that the totem-pole can be inspected as an extrapolated 'thing.' Such inspection will serve well enough, perhaps, when a curious child with no intellectual future goes to a museum. It will answer for an imperfect form of preliminary description, and for cataloguing. But it will not serve at all for the needs of a theoretical sociology, nor even for one of those incoherent enterprises known as social psychologies; in all of these the totem-pole and the tribe must be taken in complete functional presentation if either of them is to gain systematic, or as we may say, scientific, formulation.

Suppose that we next regard the tree from which the totem-pole was made, and the birds in the branches—or better still, the tree and the soil its roots live in. So far as the tribe is concerned, it may have moved into the neighborhood after the tree was grown, and in that sense the tree was 'there' before it. But the situation of tree and soil, and even that of the tree and bird if we frame it in long enough durations of evolution, is that of differentiation: without 'tree' we do not have 'soil' in the full sense

9. See Bridgman, *op. cit.*, pp. 150-166.

10. G. N. Lewis, *The Anatomy of Science*.

we read into that word. The two must be taken in function, in order to get either of them in meaningful form. And the same is true of tribe with respect to tree or bird or soil, and of bird or tree with respect to air or water, if only—and this is the kernel of the statement—we make our inspection in sufficiently extended durations of event.

I may be required, however, to substitute 'igneous rock' in place of soil. If the rock is offered cold, if the world is an expanse of solid rock, with nothing upon its face, and with neither radiation nor molecular motion within, the case is hard. Whoever conceives such rock as cosmic fact can leave me easily defeated. But if the rock is offered hot, the case is simple. And when we proceed backwards into light-waves and radiation, we have made the round into our latest constructions of knowledge and all is again in function, with knowledge, and language and experience as well, aspects of the cosmos that may not be ignored.

I can deeply sympathize with anyone who objects to being tossed into such a floating cosmology. Much as I have stressed its substantiality, I can hardly expect everyone to feel it. The firm land of 'matter' or even of 'sense' or 'self' is pleasanter, if only it stands firm. To anyone whose tasks can be performed on such ground, I have not the slightest thought of bringing disturbance. But for many of us tasks are pressing, in the course of which our firmest spots of conventional departure themselves dissolve in function. When they have so dissolved, and when we are so involved, there is no hope of finding refuge in some chance island of 'fact' which may appear. The continents go, and the islands. The pang may be like that felt by a confirmed landsman at his first venture on the ocean, but the ocean in time becomes familiar and secure. Or, if I may change the figure, the fledgling will vastly prefer his firm nest to falling with untried wings. But the parent sciences are pushing; the nest, even, is disintegrating; and there is air for flight, even though it is not so vividly felt and seen as the sticks and straws of the nest.

If such a cosmology seems fluid, not merely at the beginnings and ends of fixed frames of times and spaces—in the older infinities and eternities and continuities, or in the newer velocities and vanishing-points—but in the very passage of its ‘events,’ still all of this fluidness is within knowledge. The infinities and the continuities, the velocities and the vanishing-points, are at least assimilated into the body of events, where they no longer attest incoherence, but are on their way to enter into whatever coherence we have or may hope to gain.

PART III
SOCIAL FACT

1. SELECTIVE OBSERVATION

XX. THE SOCIAL AS A FIELD OF INQUIRY

In our analysis of knowledge and fact in Part II, we found ourselves required to inspect many of the presented phenomena of behavior across long durations of time and wide extensions of space, and thus to pass far beyond the limitations of the immediate experience of 'individual' men. To such widely extended and long enduring behaviors the word 'social' is commonly applied, perhaps in assertion of independent 'fact' or again as a form of description for 'conditions' or 'outcomes' of psychological activity.

In analyzing the psychologies in Part I, we witnessed the frequent intrusion of this 'social,' and the disturbances it produced for psychological observation and construction. At one extreme we found efforts to exclude it altogether from attention, and at the other, indications that it might inundate the entire territory; elsewhere it was tacitly accepted or unwillingly tolerated. Whatever its treatment, as fact or aspect of fact it was never absent from the psychological problem.

We shall now give our attention to this 'social' in its wide extensions and durations as a direct subject of investigation. Such an investigation, and a thorough one, is alike essential if clarity is sought for psychology, or if the aim is to secure competent understanding of the processes of our own social living; it is equally essential if the status of modern science within knowledge is ever to be thoroughly explored.

Thousands of books are upon our library shelves, or more probably tens of thousands, in which the 'social' is earnestly discussed. Many of these are styled 'social sciences' or 'sociologies.' The mere presence of a vast num-

ber of such books is no guaranty that there exists a 'science' of the 'social' or even any specifically 'social' fact which can be made the field of distinctive scientific construction. The case may well lie parallel to that of the 'psychic,' the very name of which has become discredited in all its specific factual reference, and which, in consequence, has brought confusion into all the attempted 'science' built around it.

'Social,' like 'psychic,' is undoubtedly a useful word for rough preliminary reference. So also is the word 'heavens.' As has been the outcome with this last word in astronomy, so it may be with the word 'social' in the investigations of the behaviors of men, that replacement will become necessary in the interest of precision. Again, the reverse may be the case and the word 'social' may establish itself permanently alongside the word 'psychological.' It is, however, sufficiently clear that if both these terms, 'social' and 'psychological,' are to continue to be applied to the behaviors of men, then precision in the use of either will require conjoined precision in the use of the other; no adequate 'definition' for either can be secured without an equal adequacy for the other.

I propose to establish positively, within the wide field of investigation to which the name 'social' is currently applied, the presence of specific behavioral facts which offer materials appropriate to independent scientific inquiry. To do this requires the presentation of specific instances which I have observed and which others can observe. It requires the identification and naming of these phenomena, and the taking of steps towards their classification. It requires further, as we have just indicated, that a definite approach be made towards a coherent working organization for the word 'psychological' along with the word 'social' within the great field of behaviors to which both words apply.

To observe social behaviors as 'facts'—to observe them definitely and investigate them safely—we must be able

to make contact with them; we must be able to make this contact in forms possible also to other investigators, forms which they can report in a way similar to our own, so that, by many confirmatory reports, assurance can be gained that the contacts and the reports, and thereby the 'facts,' are reliable. The sole dependable reports which we human beings possess are those that correspond to contacts made through our 'senses.' We have no dependability in ranges to which sense-contacts do not in any way reach. Whatever specialized tests of reliability we may use, we have none that come from beyond the full system of the sense-reports of all of us—none which are of such a nature that they can establish for those sense-reports an authority which these latter, in their full organization, do not themselves bring.

Among all of these sense-reports, that of vision is most widely used; it is the one which participates most definitely in our direct presentations of 'facts,' and it is the one which is dominant in our constructional presentations of space and time. One may, if he wishes, adopt the position that men possess several 'senses,' each separate from the others; and he may proceed to assert that various alternative constructions of the 'known' are possible—olfactory, auditory, gustatory, tactual, etc.; even then he will find that these alternative constructions are before us, so far as scientific inquiries go, in settings or backgrounds framed primarily with respect to visibility and the visual.

When, therefore, we seek to attain to observation of social facts, we shall not be at fault if we say that such facts, if we find them, must have about them definite characteristics of visibility. We shall not be at fault if we go further and say that we must be able actually to 'see' the facts we call social, if we are to have any reliance at all upon them as 'facts'; that we must be able to bring our eyes to bear clearly upon them, and to proceed under the control of eyesight, so that, for every construction of the 'social' we set up, we are always ready to produce definite segments or samples for the eyes to check. This assertion

may stand as it is for the present, subject to the detailed development which is to follow.

To say this, is equivalent to saying that any 'social' which is 'fact' must be before us always as 'a fact' in a specific case, and never as some vague 'abstraction,' 'concept,' 'product,' or 'inference.' Hereby a sharp limitation is put upon the many possible vagaries of construction. A frame of observability is established, and to that frame our observation must conform.

One characteristic of such a frame, one limitation that it puts upon our observation, is that every specific social fact we present must be at the same time a physical fact. It must be 'physical,' however, not in any philosophical or other dogmatic sense, but in the sense that it itself exhibits and involves those specific processes which physics studies, and in the sense that the techniques which physics employs may be applied to it. Physics always makes its constructions in space and time; therefore space and time—extensions and durations—must apply to whatever 'social' we can observe. Always the full setting and embodiment of the 'social' must be physical.

Again, any social fact that we present must be at the same time a vital fact: a vital fact in the sense that the vital processes are exhibited in it, and that the techniques of the biological sciences apply to it. In other words, the social facts, if any, are to be found among living beings, and not elsewhere.

Can we, in a similar sense, proceed to say that the social fact must also be psychological?

As the case stands today, dependable assertion in such a form is impracticable; nevertheless, the proposition sets before us in a preliminary way a situation of interconnections which we must not fail to recognize.

If by the 'psychological' we understand a specialized division of the 'physiological,' then such an assertion must be accepted; but in that case it goes no further than the

preceding assertion that the social fact, if any, is also a vital fact.

The psychological, however, as a field of research, runs far beyond the technical competence of the physiological and the vital. And in these further fields the disentanglement of the psychological from the social is the very question at issue; judgment and assertion, therefore, must here be withheld.

To withhold judgment in this way is not to imply that there is any 'social' which is something 'other than' or 'apart from' the psychological. Abstention is necessary, for the present, solely because our current word 'psychological,' whether as presentation of fact or as technique of inquiry, lacks that definiteness of meaning which we possess for the words 'physical' and 'vital'—a definiteness which alone permits us to use these latter words as significant aids in the establishment of the frame of observation which we need. The issue here is one that affects the very manner in which the words 'social' and 'psychological' are interpreted with respect to each other within those ranges of inquiry which we call 'behaviors,' ranges which have not yet been brought under the adequate control of either the physical or the biological techniques of science. Our observation here must be allowed to proceed with full right to make its own determinations.

We should be fortunate indeed, if we could carry forward our investigations free from the influence of either of these vague words, 'social' and 'psychological.' Perhaps we could then observe whatever we found to observe, just as it came. The use of these words, however, cannot always be avoided; if we were to omit them, we might find ourselves in a worse state than ever, since many of their implications would be at work in their absence. It must then be understood that wherever these words appear in the early stages of the inquiry, their application will be limited to loose provisional description. Thus the word 'psychological' will be associated with the implications of the word 'individual,' while the word 'social' will indicate,

loosely, those characteristics of behavioral phenomena, those puzzling situations of inquiry, which do not attain adequate description and interpretation in the 'individually psychological' way; it will not be until the end of our investigations that definite assignment of meanings for these terms can be reached.

We require, however, as we go along, a word of somewhat firmer texture, and for this purpose the word 'behavior' as it has been employed in the immediately preceding paragraphs is as well fitted as any that we can find. It applies variously to both 'social' and 'psychological,' and it ranges both 'mentalist' and 'mechanist' presentations of the psychological. It has appeared in citations from nine of the eleven psychologists analyzed in Part I.¹ I have used it in the preceding chapters in this general way—rarely, however, except in the ever-reiterated emphasis that 'language' phenomena, as we have taken them into account, are first, last, and always 'behavioral.' From now on, our task will be to secure increased factual precision. We have already begun to outline the conditions under which this must be done; we shall keep the word in use with an increasing definiteness which will remain ever in advance of the degree of definiteness secured for those other words, 'individual,' 'social,' and 'psychological,' with which in the end we must reckon.

In the above display of the conditions under which a search for the observable 'social fact' must be made, we have assumed as valid a reasonably well understood differentiation between physical and vital sciences, and between physical and vital facts. The validity of this dis-

1. The behaviorists attempt to give the word a close specification, but in such a way that it will still cover everything they admit to be psychological. Two psychologists avoid it, seemingly out of antipathy to behaviorism. The others use it for their most general reference to psychological situations. Dewey has expressed himself strongly as anticipating great future usefulness for the word; see *Journal of Philosophy*, XIX, p. 561.

tion is clear, so far as the present generation of scientists is concerned. It is a report on the present status of science, authoritative to that extent but not further; in neither provisional nor perfected descriptions, and in neither analysis nor synthesis, can the present-day chasm between these two great regions of scientific research be adequately bridged. We shall assume, of course, a postulate of the uniformity of knowledge, not only as covering these two groups of sciences, but as covering all science. The immediate cleavage between the two great types of research, the physical and the vital, nevertheless still remains. There are, it is true, many gaps between different departments of inquiry within the field of the physical sciences; but these are minor in character, and already there is much construction giving them common organization. Similar are the gaps that appear within the field of the vital sciences. The cleavage that exists between the two great groups of sciences, the physical and the vital, is an altogether different matter, vastly wider and deeper, and involves differentiations of extensional and durational construction which remain bluntly in evidence despite all efforts to secure smooth methods of talking about them.

These considerations suggest a still further requirement that must be met in any endeavor we may make to establish in observation a distinctively 'social' fact which is entitled to independent scientific inquiry. If the 'fact' that presents itself for such 'social' status is reducible to the 'physical' or 'vital' by the use of any of the techniques which physics and biology now possess, or by any fairly anticipated extension of them, then it must be rejected. If so reducible under technical procedure, then whatever is called 'social' will be merely a special classification within the range of either the physical or the vital.

Precisely this same requirement, however, confronts the 'psychological' as candidate for specialized factual status. If, within scientific research, either the 'psychological' or the 'social' is to be definitely distinguished from the 'physical' and from the 'vital' then it must show why. Physicist

and biochemist aid the work of the biologist—they do more than that, they condition it; but they do not themselves accomplish it. This we know, without question. Biologist and neurologist condition the work of students of behavior whether it be 'individual' or 'social,' but they themselves do not accomplish it. This we also know, but much more obscurely.

If, then, observation of the 'social,' or of the 'psychological,' is to be achieved in specific distinction from observation of the 'physical' and the 'vital,' it must be substantiated, not merely by the report and the claim of the observer, but by a full determination of the characteristics which distinguish it as 'social,' or as 'psychological,' from the two other major groupings of scientific fact and scientific technique.

Suppose, now, that some one appears who misreads the paragraphs above because he conventionalizes and thereby degrades the specifications we are giving our words; suppose that he understands the purpose of the inquiry before us to have the form: "Is there any social?" Suppose that he believes such a question to be one of a type which requires a radical 'yes' or 'no' for its answer. Asking such a question, if he has basic confidence in the existent 'psychic' as presented by the old mind-language, he ought by rights to answer, "No!" And yet it occasionally happens that such men sense very strongly the phenomena of socialization and give the answer, "Yes," thereby placing a social 'psychic' alongside an individual 'psychic.' Such formulations are in the main worthless. Perhaps the sole hard-headed attempt at observation of this nature is that of Émile Durkheim, who definitely places *représentations collectives* alongside of *représentations individuelles*.²

2. *Essais posthumes de sociologie et philosophie*, 1924. Durkheim was for thirty years the outstanding leader in the search for objective social fact. His book of 1895, *Les règles de la méthode sociologique*, has recently attracted sufficient attention in the United States to secure its translation; its publication has been announced for an early date, under the title *Rules of Sociological Method*.

Such existential questionings and problems are, however, wholly irrelevant to the inquiry we have to make here. If we are pressed for an answer to the question as existentially formulated, then we have the right to demand on our side that the word *is*, as used in the question, be given as sharp a specification of meaning as the word *social*. For our present project of investigation, the only 'is' that we can acknowledge will be one that reads "*is*, for science" or "*is*, as a sharply specified subject of scientific research." For that reading neither vehemence of beliefs nor vague applications of descriptive reference have any significance. Problem and answer alike lie solely within the range of observation and scientific technique, and of the efficient organization of knowledge through their use.

Our inquiry as to the 'social' then becomes: Can we, in the specific case of the 'social,' select, under verifiable observation, definite presentations which, by the broadest tests of present-day technique and construction, are separable from those other presentations which are dealt with by the techniques and constructions of the physical and biological sciences? And if we do select such presentations, can they maintain themselves in scientific work in correlation with other presentations established through specialized psychological investigation and set forth in terms of the 'individual' as separate from the 'social'?

With respect to such an inquiry I repeat: (1) The presence of many sociologies and social sciences is no evidence that such a 'social' can be found; (2) The antagonistic outcry of many psychologies, so long as these themselves display incoherence of organization, is no evidence that it cannot be found; (3) The postulate of uniformity of knowledge yields no dictum for the settlement of the immediate problem of our own times.

I shall first make a preliminary study of the direction which must be given to scientific attention, if the social fact is to be observed. I shall call this procedure 'Selective Observation,' and shall justify its employment in the full

scientific background (chapters XXI-XXII). I shall then (chapters XXIII-XXVI) examine certain specific cases of observable behaviors and sketch certain phases of their organization. Finally (chapters XXVII-XXX) I shall discuss certain resultant aspects of technical procedure.

In the next two chapters the preliminary study of observation will be carried forward in three stages, each of which concentrates upon a separable requirement that must be met if distinctively social fact is to be established.

First, such fact must be directly and immediately observable; and there must be no chicanery in the use of the word 'observe.' It must cover actual visibility, just such basic visibility as the established sciences require for the guidance and control of all their constructions.

Second, the observable presentation must be 'factual' in the full scientific sense. It must be 'fact,' not merely for some special project, nor for some single scientist in faith and hope, but in full constructional organization with the many facts of men's research; not in any thought that it is certain knowledge, adequate to bind the future, but in the confidence and agreement that it is safely on the path of expanding knowledge.

Third, it must be specifically 'behavioral' as distinct from either 'physical' or 'vital' in the same manner that these two last are specifically and scientifically distinct from each other.

In dealing with these issues, procedure will be slow and laborious. In the outcome the results of their examination may be stated simply and in few words, but at the start they must be attacked in a cloud of confused terminology and implication. I find that in casual approach it is easy to show to anyone certain distinctively social facts such as I shall present. But let there be so much as a hint as to the significance of these facts for further construction, and all acceptance quickly vanishes; even the observability itself is denied. My hearer immediately reduces the facts I have shown him to some alternative construction, so that for him their independent presentation is blotted out. Such

a reduction would be unobjectionable if his alternative forms were consistent among themselves and could attain practical scientific success. This, however, is just what they seemingly can not accomplish, and is the reason for seeking a different manner of envisionment.

The difficulty is one, not of 'seeing,' but rather of 'looking.' When one looks too hard at a 'ghost,' he overlooks the sheet on the clothesline; and we have to proceed in the midst of just such distortions of observation. Our 'seeing' is affected by the direction of our attention in 'looking'; this, again, is controlled by the meanings of words, sometimes in conventional, and at other times in technical, fixations; what is 'seen' breaks apart to fit the words, and, although these controlling words are well-known traitors to all consistency of meaning and coherence of development, they are all too commonly permitted to blot out the other possibilities of direct vision.

XXI. THE VISIBILITY OF THE SOCIAL

If, in conversation with a friend, I chance to remark upon the visibility of the social, he will be quite sure to smile as he replies: "Its invisibility is what you mean." He will talk to me fluently about society and its events, usually with much more confidence and assurance than I can show. But as for actually 'seeing' the social, that is another matter. Its abiding place for him is in some realm of concepts, abstractions, or ideals. Ask him what he sees: his vision will prove to be directed to men and to physical things, to the activities of the men and to the physical events, but never to any 'fact' that is itself directly social.

The unending talk about this 'social' as something which cannot be seen—something which, in consequence, lacks technical observability—leaves me with tongue in cheek, unimpressed. I long ago made up my mind that if I could not actually observe 'the social,' whatever it is; if I could not determine just what I meant by the word under normally intelligible tests; then I would stop talking about it altogether, and confine my attention to what I could observe. My friend may sneer at my assertion that I can deal with facts that are *visibly* social, but I am close to responding with a sneer at his whole pattern of intellectual activity. His view is nevertheless the common one, not only within the social sciences, but likewise within the ranks of our most tough-minded naturalists, who are rarely backward in asserting their convictions about 'society,' its 'is,' and its 'ought.'

Consider, for example, the common presentation which is the subject-matter of much elaborate investigation; namely, the State. If there is anything which is 'factual' within the ranges of social inquiry, it is this State; if there is anything which is 'social' within the range of facts, it is this same State. Do we regard the State itself—phe-

nomenon 'factual' and 'social' alike—as directly and immediately visible? Most certainly we do not, if we hold to the ordinary conventions of inquiry. We take the State to be fact, but, as fact, we do not grant it its own immediate observability. The direct observations which we permit are confined to presentations such as the man who is king or president or premier, to those other men who are congressmen or judges or sheriffs or criminals, to armies and public buildings and penitentiaries, to forts and battleships. All of these are visibly observable facts, and, when their additive accumulation is complete, the task of eyesight and the constructions of observation are assumed to be finished. The State, however, has not itself appeared.

This presentation of the State is a fair illustration of current attitudes towards social fact. If, however, we have reason to suspect that there is such a thing as visibly social fact, and if we plan to seek it out, the State is not the proper type of phenomenon to select at the start of our story. It is far too complex. We must begin with the observation of phenomena that are comparatively simple, and let those more complex await their turn at the end. Much is seen by the scientist of today which, when the first steps towards its observation were taken, would have been considered ridiculous; for example, consider the microscope of Leeuwenhoek and all its history since. It is always rash to be too dogmatic about what can or can not be seen, before adequate effort and experiment has been made.

The comparatively simple phenomena which I here choose for examination are those of human vocal speech. They certainly lie in the general field of 'facts,' even though we find many conflicting ways of giving them what we may deem their best factual characterization. They lie, with equal certainty, at least in some of their aspects, in the field of the 'social'—if in the end it can be established that anything specifically social exists. They have the further advantage that we can always find specimens of

them close at hand, so that we have materials available to give our eyes the training in observation that they need.

The verb 'to see' has a number of meanings, some literal, some metaphorical. With the latter we have no concern. With the former we must avoid a dogmatic choice. If it is harmful to limit vision to a schoolboy's meanings of the verb, it would be equally harmful to force some other meaning to cover the case of 'seeing the social.' We must examine the verb 'to see' before we can use it, and along with it, such correlated words as 'vision' and 'observation.' We must do this, moreover, by a study of the actual ranges of application of these words in the field of scientific research, and not under exclusive reliance upon some tentative construction provided by any specialization of scientific enterprise, such as the psychological or the neurological. Our problem is one of scientific vision and envisionment, and of no other kind.

We find the verb 'to see' used sometimes with an immediate grammatical object, that is, transitively, and sometimes without the implication of an object, as in the sentence "I can see." It is the former use that concerns us here. 'To see' as an 'intransitive' activity, process, or capacity may be made the subject of specialized scientific inquiry, but only through the aid of the fully transitive activity of observation under visual control, which always requires along with the 'seeing' a 'something seen.' It is this full behavioral event, inclusive of both the 'seeing' and the 'seen,' with which we must concern ourselves.

We may therefore exclude all discussions of mental powers or capacities, such as arise in terms of the old mind-language, as irrelevant with respect to vision. By the same test we may exclude any strictly physiological or physiologically psychological presentation of vision in terms of sensation through the eyeball, such as color discrimination, acuity, or local sign.¹ The facts and issues here

1. We may confidently expect physiological psychology to continue its steady progress in the interpretation of vision. Each step in this progress will aid the development of the wider scientific construction of observation, within which ocular vision is involved as a phase.

involved are pertinent to the situations of scientific seeing with which we are concerned, but they in no way provide the full descriptions we need. The scientific seeing lies in the regions of perception where the perceiving and the perceived are found together.² We shall take it, then, that 'to see a thing' is the basic factual reference with respect to which the words 'vision,' 'visible,' and 'visibility' must be appraised, as these words enter into our understanding of scientific observation, scientific fact, and scientific construction.³

It is desirable to divide our immediate inquiry into two parts, the first stressing observation as activity, and the second, observation as factual report; we should always remember, however, that such a division is solely for technical aid in discussion.

In the first part of this inquiry four important characteristics present themselves. Observation is not limited to the range of any one man's eyes, but is built up by many men aiding one another; observation is not an affair of the naked eye alone, but employs tools; observation is not found by us in the form of some 'innate power,' but

Physiological psychology will hardly pretend, however, to be the 'real root' of all knowledge, since it itself derives its importance and dependability from its coherent organization with wider scientific constructions. Short of becoming such a 'real root' of all knowledge, it can hardly expect its own progress to destroy the more general position taken in the text.

2. Even from the strictly physiological point of view, much work in this direction is being accomplished. All groups of theorists, whether of the cell-faculty or of the sensitive-plate types, will have to reckon with such experimental results as those of J. B. S. Haldane, who investigates the eye and its stimuli in interaction, and finds no merely objective cause of color or brightness.

3. Certain further problems arising from the involvement of human vision with wave-lengths and from the flight of physics into matrices will not be discussed in this book. Our present procedures are comparable only to those of physics in the stages in which it was first obtaining its firm start. The more intricate issues will receive discussion at a later time in an investigation of the manner in which the organization of physical phenomena must be established within behavioral inquiry in specific projects of social research.

in phenomena involving training; observation builds, and then proceeds to work within, a great coherent construction of scientific observability. Let us consider these four characteristics in that order.

No single scientist ever sees with his own eyes more than a very small fraction of the phenomena which he accepts as fully visible and observable. He depends upon his fellow-workers, past and present, as upon himself—always practically, never in absolute certainty. Even in his own most important experiments, he uses largely the eyes of associates and assistants; he uses them not merely to economize effort, but because he knows that in many cases one pair of eyes alone cannot be trusted, and that confirmations from other eyes are required; deception is easy, and misreadings of many types are possible.

In very few cases in modern science does the naked eye do the work of vision. The other 'senses' come into account, of course, and other 'patterns' attributable to the 'whole organism' are involved. But limiting ourselves to the eye, we find it everywhere employing its own tools. A man uses a plate with arrows to aid observation from the mountain-top, or a map as he picks out trails. He uses names of things to keep his vision true, making words the veritable tools of eyesight. In science, the microscope, telescope, and spectroscope have been great aids to vision, and these are now supplemented by a thousand other intricately connected mechanisms. The eye works always, but scientific visibility is not the work of the eye alone. The eye is needed, but also the eyepiece. Take away either, and scientific observation will collapse.

The great telescope shows nothing of significance to the untrained eye. The astronomer 'sees' as the result of long training at the eyepiece and by expert reading of the photographic plate. In microscopy the case is the same; the instrument tells little to a man untrained. Slowly and painfully better vision is acquired by men of great acuity and specialized interest; after that comes the long training of their followers. The wide fields of everyday seeing lie

spread out around this specialized observation of the scientists; these fields also develop through long training in the individuals and in the race. What the mechanic sees and fails to see in the forest, and what the woodsman sees and fails to see in the engine, provide no final determinations of visibility; they are no better tests than 'what the dog sees.' We are dealing here not with extraneous conditions of vision, but realistically with vision as it is everywhere found. We have listed 'words' as tools of vision in special circumstances, and, more broadly, we find language always at work to hold our vision and observation in training. Language is a necessary component in the construction of all instruments and tools; far back in the evolutionary series it aids the differentiations of observation in its very work of giving specification to the observed.

These considerations of tools, training, and cooperation culminate in the great constructional frame of observation, the spatial and temporal forms in which 'things' are presented. The presentations of the old mind-language, which were taken as having duration but not extension, have vanished just because they did not meet the full requirements of observability; no visibility at all could be established for them. The atom may not yet be seen, in the limited senses of the word 'seeing,' even by the aid of the most powerful microscope, but it is nevertheless observable in a construction of visibility.⁴ The electron is not seen in the specialized sense in which we see stones with the naked eye or bacteria under a microscope; nevertheless it manifests itself observably in the visual frame. The wind is observable; its observability is framed in the very construction of visibility which all scientific fact requires where the word 'fact' properly applies at all, yet one can no more put one's eyes upon it than upon atom or electron.

Together all of these considerations yield a simple, almost a self-evident report, but one which is nevertheless of

4. The blind man, even the man born blind, may do sound technical construction within the frame of visibility. Language is here the essential.

the greatest significance with respect to social fact. That which we are accustomed to observing is not all that we can observe. That which we call 'seeing' in the most limited, direct rendering of the word is not all the 'seeing' that we do; it is not even a fair expression for the general situations of our seeing. What we may observe is connected with our need for observation, and is conditioned by frames of observability that we possess in fixated or expanding forms.

From observation as activity, we turn to the 'what' of observation, to the factual report. Here, just as in the preceding paragraphs, it is necessary to free ourselves from the dictation of minor conventionalities of meaning, and from the interpretative devices growing out of them. The 'thing seen' requires appraisal, but not necessarily in the way a Neanderthal man appraised it, nor in the way a Schoolman appraised it, nor in the approaches of kindergarten or common-school instruction. However admirable any or all of these may be, our concern is now with objectivization as it is attained in the procedures of modern science.

'To see a bird' is standard use of language, acceptable from every common point of approach. For 'a bird' one may substitute 'a dog,' 'a tree,' 'a man,' or any one of innumerable other presentations.

How, now, do we stand if, instead of saying 'see a bird,' we say 'see a bird in flight'? In earlier generations there would have been much resistance to any literal rendering of that expression. The resistance would have arisen from a distinction conventionally accepted as between the 'bird' itself as actuality, or existence, or positive 'fact,' on the one hand, and its 'flight' as ephemeral action or history, on the other; this latter might perhaps have been admitted as 'factual' in a way, but not in the good, solid, positive sense in which the bird itself was 'fact.' Such a distinction can hardly arise today, in an era in which science studies the bird as all activity, as physiological pro-

cess throughout, even to its ever-renewing and renewed bony structures. To 'see a bird' at all we must see a breathing bird, a bird with circulating blood, with cellular life, and with all the rest of its physiological activity. The bird before our vision as scientific fact—an expansion from the bird of our infantile impressions—is 'a bird in such activity.' Even the 'dead' bird must be 'seen' as 'activity,' though as activity which is physical now, and no longer vital. The phrase 'to see a bird in flight' involves, then, no break in meaning from the phrase 'to see a bird,' so far as factual report in scientific observation is concerned.

From the 'bird in flight' we pass to the consideration of the 'flying bird' and to the 'bird's flight' as something that we can 'see,' and thence to the statement that we can see 'a flight.' This last involves a slightly different stress in naming, but no significant difference in observation, whether in terms of observing activity or of the observed thing. True, we do not see the flight without the bird; but neither do we ever see the bird except in full and wide-ranging activity within which flight is just one single form. The sitting bird is using its muscles to hold to its perch, precisely as it uses its muscles in flight. No bird without such activities is ever 'seen' at all. The bird-flying and the bird-not-flying are alike observable only in a common frame of visual observation. From the wide points of view of research, no 'part,' phase, or aspect of the bird has greater fixity or materiality than 'a flight' itself.

One feels the need of apology for devoting so much space to such a point. However, most of the difficulties which confront us when we attempt to determine in what sense, if any, the 'social' is observable fact lie concealed directly within the range of implication of the words we have been considering. The position here taken could doubtless be woefully abused. The requirement, then, is to avoid abuse in either direction, and to secure maximum observational powers in both.

Turn now to the inspection of a man; observe him when he is talking. We come thus to the specific case of vocal speech. The talking-man before us may be engaged in conversation with others, or he may be remote from any audience—"talking to himself," as the common phrase puts it. Disregard the 'others' who may be present. Confine attention, for the moment, to the single man, and call his activity 'speech.' Here the observability is directly comparable to that of a bird in flight. If we can see the man, we can see him talking. We can see the talking. We can see an instance of vocal speech. If, for purposes of study, we wish to segregate his speech in this presentation, we can do so just as legitimately as an ornithologist or physicist can segregate 'flight' for special study, and with just as great observable definiteness. In neither case do we depart from the frame of observability or from the special characteristic of visibility within that frame. In each case we are investigating the specific phenomenon before our eyes, the 'thing seen.' Whether or not this form of envisionment is important, is, in the special case of the 'man-talking,' an entirely different question. All that comes into account for the present is the practicability and the legitimacy of the observation, if need for it arises.

What is the situation if, instead of confining our observation to the single man, we consider two men in conversation? Describe this case as that of the 'conversational remark.' Let us place the two men in a room or other delimited space in which they carry on their conversation, and let us post ourselves in a convenient corner from which to make our observation. Select for examination one separate 'conversational remark.' This may consist of a single exclamation, the utterance of a name, or a connected sentence—whatever it is will make no difference

5. For analysis of the great typical renderings of the words 'speech' and 'language,' as the dictionaries display them, *see* chapter XXIII. The present application of the word 'speech' is merely one of these renderings used for the purposes of the immediate paragraph.

in any possible observability. One man speaks; the other man hears; the intervening air-waves transmit that which, with reference to the 'hearing,' we call the sound. We can 'see' the man-speaking and the speaking. In exactly the same sense we can see the man-hearing and the hearing. This does not assert that we can 'see the sound.' We specify by the word 'sound' an aspect of the event before us, distinguished from 'sight' in a narrowly ocular definition of the latter, but nevertheless presented in a frame of visual construction within which both the man-hearing and the hearing can be envisioned.⁶ It is in this same construction of the visibly-observable that the connecting air and the transmitting air-waves are before us. Given this much, then the conversational remark is itself visibly observable. Certain phases of the remark, or, speaking loosely, certain 'parts' of it, have direct ocular visibility, while all its other phases are before us in an extended frame of visibility.

In the background of problems and facts provided by modern scientific research there are no obstacles whatever to such an envisagement of the conversational remark. Neither, on the other hand, is there any pressure towards it. So far as the general scientific background is concerned, it is permissive and that only. The further question is one of usefulness, of efficiency in research—that is to say, of hypothesis. This is a question for much detailed examination later on. Here we have to remember that modern science is not primarily a process of snipping events into little pieces and then pasting them together again, however the mechanistic observer may imagine it thus. Its progress lies just as much, in the opposite direction, towards the identification of great durational events where previously it had been able to attain only to fragmentary inspections.

6. Compare, incidentally, Edmund Jacobson, *Progressive Relaxation*, p. 77: "Imagining sounds is accompanied by tensions, usually ocular (as the source of the sound is visualized)." See also *ibid.*, pp. 174 ff.

The many obstacles to envisionment of the type suggested arise entirely from the fragmentary inspections conventional to custom and language. We may admit readily the practical value of each of these fragmentary inspections for limited purposes of daily life; we may admit, further, the legitimate use of each of them in hypothesis for the guidance of investigation. At the same time, however, we have the right to demand of each, when it is put to work in hypothesis, that it offer proof of its value in terms of the success it achieves or shows prospect of achieving in scientific research, and that it limit its assertiveness to the regions of such successes, present or prospective.

Foremost among the conventional obstacles is the habit of attributing the most significant phases of the event to 'man as actor.' Thus the stress of attention in examining speech is thrown heavily upon 'the man who speaks.' Once he was 'soul,' then 'mind'; now he is frequently 'nerves,' 'brain,' or 'muscles,' or again, a 'segment of motion,' an 'activity,' or a 'pattern'—the varieties of presentation have been examined in earlier chapters. But always he is held off in isolation from the rest of the event. In each such frame of inspection and report much valuable research may be accomplished. In no one of them, however, is direct observation attained for the full observable situation; each is imperfect, and hence, for more general researches, a mutilation; each is a hindrance to observation beyond its immediate objectives. Since a close study of the status of the conversational remark in this respect must later be made,⁷ and since the more general characteristics of the situation are well enough known, the bare mention of the difficulty will for the moment suffice.

Alongside this obstacle to the direct envisionment of the conversational remark stands another, its correlate. This is the habit of setting off to one side all that part of the event which is not adequately expressed in individualized

7. See the discussion of 'act' and 'actor' in chapter XXIII.

reference, and treating it as 'abstract' existence or as 'history.' When a philologist, historian, or student of cultures takes for granted the isolated man and faces his own much wider field of inquiry, this manner of treatment is, as a rule, his only recourse. He may know well enough how thin and feeble is his historical presentation or how mystically vague his abstract presentation, but he introduces a few pages or perhaps a chapter or two of philosophical or quasi-psychological orientation into his treatise, and lets it pass. He can do good work in some respects, but where his interpretation must broaden out, he is helpless. After he has adopted one of these conventions, he soon grows accustomed to it and takes for granted that it is necessary, whereupon it becomes a serious obstacle to better envisionment.

The two obstacles, that of the isolational man and that of the abstract or historical mass presentation, supplement each other, but without underlying harmony. Each draws an appearance of strength from the other, but neither has firm texture. Around and between them are large regions of incoherent formulation. By neither method is the phenomenon that is set before us one which will tolerate direct observation and observational construction.

In contrast with both of these forms of presentation, the phenomenon exhibited under the name of the conversational remark is one of direct observation. It is the behavior of men; it is the visible behavior of men; but only as it is referred for its locus and embodiment to two or more men, one of them speaking and the other hearing, *and* to the intervening air. It is 'concrete' in the vernacular use of that word when we contrast it with the philological abstraction of language, or with any superficially 'historical' description. It is similarly 'concrete' when contrasted with mental 'faculties' or 'activities' or 'patterns.' Not that the words 'concrete' and 'abstract' have significance in modern scientific application; they are nebulous wraiths surviving

from primitive man's attempts at description, serving to-day merely for the crudest contrasts and reports.

The conversational remark, regarded as a 'whole,' has as much material texture, as much substantial construction, as much 'body' as a man himself. Vocal muscles, air, and ears make up the most prominent portions of this 'body.' Neurological, muscular, and other physiological extensions may be brought into account for its fuller presentation. It is just as possible, just as legitimate, to inspect the full conversational remark in this way as it is to inspect separately the speaking-man or the hearing-man, or the speaking or the hearing.

The 'whole' which the conversational remark presents is one of 'event.' Speaking, separately considered, is an event; so also is hearing. They are events, first because they present themselves in durations, and second, because their study does not require the positing of 'material' or 'mental' substrata with respect to which they are, in an ancient form of expression, 'accidents.' Science offers us no dogmatic rule whereby the 'beginning' or 'ending' of 'an event' can be positively and permanently determined; what are to be taken as beginnings and endings must always be established provisionally for the purpose of each specialized inquiry. Where speaking and hearing are considered together in the conversational remark we extend the duration under consideration, and we have before us 'one event' for the whole, just as truly as we have 'one event' for either the hearing or the speaking separately. The behaviorist, in his time, extended the event under his observation by passing from a brain-cell or a 'mind' to the examination of a 'movement-segment' of space; but he has no authority to say that the process of extension must stop there. The extension to a space and time that includes two men is just as legitimate; all depends upon purpose and upon efficiency in inquiry.

It is essential to any such extension, however, that it be, not arbitrary, but 'functional' in the sense in which that word is now commonly used. Exactly this is the case

for the conversational remark. Each 'part' of it is a phase; each element in it, in whatever way we choose to analyze it, is before us with respect to the other elements obtained by the analysis. The functions and 'meanings' of each 'part' are developed and interpreted in terms of the other 'parts.' The conversational remark thus has extensions and durations directly as it is observed. It does not resist the practical operation of its separation into 'parts' for special purposes of inquiry; it resists only the dogma that any conventionally established scheme of presenting such 'parts' possesses absolute authority for all forms of further inquiry. All that it requires for its observation is release from such dogma. Its status of 'wholes' and 'parts' is comparable to that which physicist and physiologist secure as tentative presentations for the needs of their own fields of inquiry; it has similar potential values and no other.

Observation such as we have attained for vocal speech in the form of conversational remark is what I have called in the preceding chapter 'Selective Observation.' It is acquired by focusing our attention upon a situation for which better understanding, and consequently better envisionment, is needed. It is not the seeing of what we *want* to see or what we are accustomed to see, but it is an attempt at seeing something that we *need* to see. It is a choice, a selection, a candidate for further development in observation. It is just such a choice or selection as the Newtonian physicist makes when he establishes a definite 'system' with respect to which he works in terms of 'force,' 'action,' or 'conservation.'

The behaviorist's observation of the moving vocal muscles of the human organism is plainly his selection of phenomena. When the physiologist centers his attention on 'brain' or 'neural system,' that, again, is his selection. If we go back to the psychologist's 'mind,' or to the theologian's 'soul,' again we find selections. These latter had extreme popularity in their time. The theologian would never have admitted his selective activity—he made his assertions di-

rectly in terms of 'reality.' The mentalist was just as confident in his generation. We today, looking backwards, can see and understand the special kinds of selections that our predecessors made. But by that very token we shall do well to give close appraisal to our own selections. Whether we are mechanists, functional psychologists, or students of social phenomena, we shall make our best progress if we recognize and appraise carefully the steps we take. If there is a master-observation, a master-assertion of observation, which should govern all other observations and assertions, we shall certainly not know it until the nature of the 'mastery' is made clear. Until then we may select what we need, or seem to need, and perfect it as observation, and we must be chary about confidence in our status as supreme authorities, or as issuers of ultimate decrees.

What the psychologists of the configuration school have exhibited to us with respect to 'figure' and 'ground' will well serve as a subject for reflection at this stage. One may be accustomed to a 'figure' and neglect the 'ground,' but one may, with due care and labor, reverse his observation and see 'figure' itself where 'ground' lay before. What we must do is to bring over this power of discrimination, this training in observation, from the immediate field of ocular vision where it was developed, to the broader ranges of scientific observation in general. One investigator may be so thoroughly accustomed to concentrating his attention upon the 'figure' of the isolated man, that all else remains 'background' to his observation. But another investigator may equally well attain observation of the conversational remark in its transition from voice to ear; he may hold it firmly before him as 'figure,' and in so doing inspect the human organism and much else as the background to the selected presentation of his immediate inquiry. When one reflects upon how long it took, and how difficult it was, to discover the full import of 'figure' and 'ground' for psychology, one may appreciate how well worth while it may be to make similar studies in the direct social field.

We have already mentioned two broad conventional attitudes which are obstacles to the observation of the conversational remark. Assuming that these are in principle overcome, we shall still hear various specific objections which originate from them. A case may be cited in which a speaker is definitely observable, but in which his audience can not be seen, or perhaps can not even be closely identified. Again we may be asked: What about a man talking-to-himself?

There is involved here a question of the entire construction of the observation of behaviors—a construction which we shall later call that of behavioral space-time. It is not a question to be passed over lightly, nor one to be settled in a few paragraphs. It is a question which will occupy us throughout the rest of this book, as we let extensions of behavioral observation and the construction of behavioral space-time accompany each other hand in hand. Here only a first rough indication can be given of the situation as it appears in the modern scientific background.⁸

The question at issue may be given this form: Where we find a man talking-to-himself, or practising alone in his room the speech he is to deliver to tomorrow's audience, do we secure such a fixed and certain observation that we must take it as primary phenomenon, and that we must regard that other observation of man-talking-to-another or man-addressing-audience as merely a secondary or superficial description? Is this latter observation to be understood and interpreted only by the compounding of 'separate units' of the former type?

If observation were confined to what one pair of eyes can see at one instant, the criticism would hold. But such a position is absurd. Following it back, one would be compelled to pass further to elements of isolated sense determination, and would not 'see' anything at all. We never 'see' more than one side of the elephant at once, but we

8. Since the construction of behavioral space-time will be thus slowly developed, its appraisal may be aided from time to time, if one wishes, by correlation of the indexed references to the development.

XXII. THE FACTUALITY OF THE SOCIAL

Assume, now, that we have the conversational remark—the speaking-heard—before our observation in the specific instance, with speaking-man, hearing-man, and connecting-air all included. Grant legitimacy to its observation, but grant nothing more. The observation is practicable, but it may nevertheless be trivial, unnecessary, or worthless. Perhaps our earliest cultural ancestors made just this form of observation, but perhaps even they came quickly to see that the conversational remark should be broken down into components—that such components were the ‘real facts’ upon which their attention should be centered.

However the case may have stood in primitive times, and with this we have here no concern, it is notoriously standard practice today to accept such components as ‘the facts,’ and to make report in terms of ‘individual’ men and of ‘material’ things—perhaps even with a third set of components adjoined, a class of things that are neither ‘personal’ nor ‘material.’ The individual men may be taken as separate spirits, minds, actors, or brains, some speaking and some hearing, while the other components will include air, light-waves, and physical ‘objects,’ and, haply, certain substantively stressed assumptions of ‘vital,’ ‘ideal,’ or ‘social’ phenomena. Against this conventional distribution of materials, it has been necessary to wage a hard struggle to attain even a grudging permission to inspect the conversational remark as itself visibly observable in its directly presented situation. With that much gained, further questions remain to be faced.

Even though such an observation can be made, is it worth making? Does it report a ‘fact’ in any significant sense? May not its report be one of ephemeral appearance, or even of illusion? Even if it be a significant ‘fact,’ is there any reason for regarding it as a specifically *social*

fact in distinction from those facts we class as physical or vital or psychological? To these questions of factuality and sociality—of scientific factuality and of specific scientific sociality—we must next turn.

The various ways of breaking down the conversational remark into components, as these have been in part sketched in the preceding chapter, are all, in effect, denials both of the significant factuality and of the specific sociality of such an observation. They are denials, for the most part, by implications of construction rather than by direct attack. So long as a 'blind spot' for the observable conversational remark remains in a student's field of vision, his denial, whether by implication or by direct statement, can have little weight. It is only after the 'blind spot' has been removed, after the phenomenon has been directly 'seen,' that the further discussion of its import and significance can successfully be made.

The problems of scientific factuality and of specific sociality are not separate questions. If the conversational remark, as directly observable, has any high factual importance for scientific research, this will be because of its specific sociality, given the status of the sciences as we find them today. If, on the other hand, we are to grant it specific sociality, we must be able to assure ourselves of its factuality in full harmony with other leading forms of factual attribution in science. Nevertheless, I shall here separate the inquiry, for the sake of explicitness, into two sections.

1. *Factuality*

'Fact,' for science, is the reference it establishes for the most efficient language it uses. The frame of this reference is observability. The act of reference in science is not that of ultimate fixation, but is always made in the full spirit of the expanding powers of science. The individual scientist may fail to recognize this at some stages of his work, but the development of science across longer periods always takes care of the referential outcome. A vehemently pro-

claimed fixation of fact proves always to be, not an ultimate control of observation, but rather a single special delimitation of 'fact' for a practical purpose at a time and a place.

The present status of 'fact' in social research may be illustrated by examining again, and at greater length, the phenomenon called the State, which we have already found to be accepted as 'fact' and as 'social,' but not as itself visibly observable. How does this State, as fact, compare with facts that enter into adequate scientific development? What 'kind' or 'type' of fact is it when brought into comparison with scientific facts in general?

In jurisprudence, political science, and philosophy, we find three or four leading 'concepts' of the State, each with many variations. The word 'concept' reveals enough, since it is devoid of scientific significance, and the men who use it have no technically definite understanding of what they mean by it.¹ The State may be regarded as vividly 'real' in an idealistic or absolutist phrasing, though this attitude is slowly disappearing everywhere, and rapidly in America. It may be put before us as a legalist abstraction, somewhat akin to the linguistic abstraction of the philologies. It may be regarded pragmatically, with reliance on certain specialized formulations of psychology. It may be described as a 'product' of individual human activities, under a careful evasion of the problem of 'locus' for products of its type. In none of these forms is the State presented as a tangible, graspable, closely observable phenomenon with which we can deal safely and directly in research. In none of them do we have it before us as an evident 'fact' in the way we have 'a dog' in direct observation and corresponding designation, allowing improved observation and improved terminologies to advance hand in hand. Nor do we have it as a fact in the way an atom is a fact, in an adequate construction in which it is organized to other facts in a full field of observation. While it is unhesitatingly called 'fact' and likewise

1. For the word 'concept,' see the concluding paragraphs of chapter XXVI.

'social fact,' this is not done in the significant sense in which the established scientist uses his term 'fact.' Its investigation is often called 'scientific,' but that adjective is abused in the application by the very test of the particular 'factual' characteristics which are intended. The split is wide and deep. The State is asserted to be fact, but it is denied proper observability. Its students make it inhabit some strange region which is neither 'physical' nor 'mental,' nor clearly and observably 'social.' Whether such a State is 'thing' or 'event,' whether material, immaterial, or mixed, evades determination. No matter how elaborate are such discussions, the 'State,' about which they all center, is merely a word of confused survival from linguistic antiquity, in its applications primitive and inadequate except for minor practical purposes. It is one of those presumably convenient verbalisms which prove to be most scandalously inconvenient, where we seek consistency of observation, of report, and of interpretation as our studies widen beyond the narrower regions of their origin.²

If the State is not 'factual' in some definite scientific sense, then the sooner we drop it from among our direct objects of study, the better. If not 'factual,' then the word 'State' should be used at most for preliminary assemblage of materials, and should be abandoned at once when definite inquiry begins. If the definite and specific scientific 'facts' are men, or minds, or qualities—or lands, or seas, or climates, or genes—then the substantial scientific investigation should have both its end terms and its initial terms in these forms, and in no other. If trains of causation, even under the most liberally patterned renderings for the words 'cause' and 'effect,' are to be followed, then the beginnings and the endings should be factually germane to each other. Even as an intervening term, the 'abstraction,' State, will not suffice, nor will the State as 'product,' whether material or mystic, swung between human origins and human effects.

2. My earlier attempt to make definite observation and to secure an approximation to scientific presentation for law and the State will be found in my book *The Process of Government*, 1908.

If, on the other hand, the State is properly 'factual' for scientific research, and if it is entitled to investigation as such in its own right, and by special techniques appropriate for its own study, then one of two methods of procedure is essential. The State may be shown to be actually and definitely 'fact' in the same sense of the word 'fact' that other sciences employ. If not that, it may be shown to belong to a special classification of fact, distinctive from the special fact of the natural sciences. In this latter case, however, the generic applicability to it of the word 'fact' must first be demonstrated, and after that those characteristics of differentiation must be displayed which determine adequately the classification in which the social fact—the State—is set apart from other types of scientific fact.

The State has been chosen for illustrative purposes because its status with respect to 'factuality' is so clear—or rather, so extremely unclear—that recognition will be given to the existing situation so soon as it is pointed out. But what is true of the State in this respect is substantially true of the great body of presentations which social research has before it, no matter how vehement a denial may here or there be made. It is true of all the presentations that the science of economics has before it today. Nobody can say what credit 'is' scientifically, i. e., observationally; no one can say in specific detail which fits coherently into expanded observational construction; the enormous literature about it gives no help. The same is the case for 'money,' which has no properly observational presentation in a constructional field of coherent observations. The gold 'by itself' is not money. The 'coinage' by itself is a physical pattern. Money is money only in use and as used and in its construction of usage, but it is exactly such a construction that is lacking in adequate coherence. Or consider the case of 'crime.' A thousand 'definitions' are available, but all are myopic; the word has no established 'meaning' or 'reference' in full construction under scientific agreement. The 'observational' is lacking throughout the social field; hence the 'factual' is lacking, and the word 'social' remains a word

of chaotic reference, with no security of scientific meaning. For the great mass of the terms used in social research, success still fails for the analysis and construction of reference, for the specification of 'factuality,' and for the organization of that factuality to other scientific observation.

Progress towards precision may be hoped for only if we secure it first for our humblest materials. We return, then, to the case of the 'conversational remark'—the emitted word, its air transmission, and its receptive hearing, taken all together as one event of observation. Allowing its visibility as permissible in case of need, we have now to concentrate upon its factuality under the general program of scientific inquiry. Can it be freed from the bastardies of the abstract, and of mental or personal reference, and given a legitimate place in the family of facts by its own right?

We might perhaps say: "If visible, then factual," and let it go at that. The assertion would be true enough in its way. But we are concerned with something further, namely, the scientific factuality. A visual illusion is certainly factual in its own way—that is, 'as illusion'; but scientific inquiry at once proceeds to restate the facts so as to do them fuller justice in conformity with other facts. The 'visibility' is a preliminary requirement, but it alone does not determine the full factual stress, which is one of order, not of chaotic preliminary report.

We must first consider the following. The enormous activity in investigating and writing about the social has been noted. While in this there is no evidence that we may expect to find any 'social' *qua* 'social,' it does attest to some kind of immensely important factuality somewhere, economic, linguistic, legal, political, domestic, and other. Though the reference of the words used in these various fields of inquiry is not at all dependable for the particular words, we have among them cumulatively very strong evidence of some factuality which greatly needs identification. Failure to attain coherence through the conventional reductions to vital or psychical 'facts' emphasizes the need of

further search. While this situation offers no argument for the acceptance of our immediate candidate for factual standing, the 'conversational remark,' it does give strong reason for a fair hearing for any candidate that presents itself.

Directly pertinent is the observation that wherever we find these 'social' phenomena, and of whatever variety they are, the conversational remark, the 'speaking-heard,' is found actively at work in the neighborhood, within the wider situation presented to us. The officer shouts "Fire," and his riflemen hear. The shouting and the hearing together form a definite component of a situation in which the action of firing appears. The shouting would not suffice if there were no hearing; nor the hearing if there were no shouting; nor both together if there were no atmosphere or other medium of conveyance; nor all three if there were no 'communication.' Inhibit the captain's vocal chords by excitement, or deafen the soldiers' ears by cannon roar, or overwhelm them by shock (generalizing the case to cover possible substitutes for verbal communication), and nothing will happen. Similarly, the 'speaking-heard' is component of all legislative, judicial, and administrative procedure, to go no further in illustration.

Next to note is the manifest practicability of immensely expanded construction starting from the 'conversational remark' as an element. All of the results of the philological investigations of the last century are before us, hanging, so to speak, 'abstractly' in the air, but ready to drop to the solid behaviorial ground provided for them. This behaviorial ground is not that of the primary presentations of the 'behaviorist,' who requires the illicit introduction of the social values of language to give his segmentations any psychological meaning whatever. Our presented spatial segmentations are wider than those of separated individual men, and they enclose directly, and in their own right, the linguistic values that require research.

Is a treatment of the 'speaking-heard' as candidate for factual place in research in any way abhorrent to the preva-

lent procedures of the more solidly established sciences? We know that vague 'abstractions' are abhorrent, because they are homeless in the known world of science. We know that the 'psychic' substances of the old mind-language are abhorrent, because they lack extensional observability. We know that the physiological concentrations, and the behaviorist-movement segments in individual scissoring, are abhorrent the moment they assert themselves as 'causes' of phenomena which lie far beyond their own descriptive fields, since such assertion is mere arrogant substitute for research, and not scientific research itself. But none of these defects are found in the 'conversational remark' in the form in which it is before us. It has extensions and durations; it appears in a field in which definite factual observation is needed; it is of the widest distribution in that field. It is fitted to serve as a building block; it lends itself to many branches of research; it makes no claims beyond what its actual future employment may justify. It asks no welcome, but insists on the permissibility of its procedure. So far from being abhorrent to the methods and observations of advancing science, it conforms to them in its full presentation.

2. *Sociality*

With the conversational remark established as observable and significant fact, our attention next turns to the question of its specific sociality. The word 'sociality' has had long use, for the most part in a form of contrast with 'individuality'; it sets before us in its tentative way a certain holding-together of men in society. This word is to have no place in our further terminology, but will suffice as a first aid to discussion in the preliminary survey of the situation, which is all that the present chapter offers.

The issue comes before us in two-fold form. First, is the observable and factual conversational remark 'social' in a sense that differentiates it from 'physical' and 'vital' in factual process and in technique of research? Second, has it

adequate differentiation from the phenomena displayed in the established processes of psychology and through the psychological techniques? These issues require a further and deeper probing into the characteristics of its factuality. They are manifestly issues for which the firm solution lies rather in the long outcome of investigation, than in over-assurance, whether favorable or unfavorable, at the start; one makes a sketch, and then works hard to find out whether the sketch is worth while. For the present we shall have only the sketch.

Place the conversational remark, as phenomenon, beside the typical phenomena investigated either by physics or by biology; there is evidently nothing in the procedures of either of these two sciences that extends so far as its preliminary description. It is communication; it is the conveyance of meaning. Neither physics nor biology presents us any similar phenomena, nor does either offer any technique for their direct analysis. What may be the case a hundred years from today is irrelevant to decision today. The biologist does not abandon his special field of research, nor the use of his specialized technical methods, because he anticipates that at some future date physical statements may perhaps transform or replace his biological statements. Much less may the isolation of communicative phenomena such as the conversational remark today be abandoned as furnishing a subject-matter of specialized inquiry.

Physics and physical chemistry give great aid to physiology. Just so physiology and other biological sciences give great aid to the investigation of the speaking-heard. It would be folly to proceed in the study of this last phenomenon without taking advantage of all assistance that can be secured from such sources. But when one man says 'dog,' and the other man hears 'dog,' and the communicational situation between them is present, the physical and vital sciences yield nothing that bears on the question as to how the two men differentiate and organize their recognitions, how 'dog' enters the situation as 'fact,' or how verbal organization develops from the simple instance of the exclamatory

'dog' onwards to the modern scientific analysis of 'dog' events. If 'tree' is the word emphatically present in the conversational remark, the sciences of 'nature' give no interpretation, nor even any preliminary description, of the manner in which 'tree' passes through its many stages, all the long way from obstacle or club to object of worship, building material, or plant physiology. This or that detail of interest is supplied, but nothing of significance to construction appears.

The conversational remark thus makes its preliminary case for a specific sociality, in distinction from the phenomena of the physical and vital sciences. In this, however, it has no different status from that of the phenomena commonly called 'psychological' in their 'individualized' references. The physical and vital sciences yield nothing whatever that describes the simplest 'apprehensional' situation that psychology studies. In such an apprehensional situation there is an event, a process, a type of happening in the world, wholly beyond the technical possibilities of physics and biology. The inquiry into men as animals, into their physiology and heredity, yields much useful orientation, but no direct technical aid. The psychological study of perceptual activity, on the one side, and the social study of the communicational activity, on the other, are alike in technical severance from physics and biology.

We must therefore make a preliminary inspection of the situation as between 'psychological' and 'social,' where the conversational remark is taken as an observable and factual representative of the latter. The prevalent approach allots psychology a certain priority or dominance with respect to sociology; the arguments then turn upon the nature of this dominance and the technical manners of using it. 'Psychology' is, however, not one science, but many efforts towards the attainment of scientific treatment, incoherent thus far among one another. Until this confusion is cleared away, any claim of dominance is barefaced claim, and nothing more. On the one hand, specifications of sensation, perceptions, and all the intricacies of

thinking are observably before us entangled with the conversational remark. On the other hand, the conversational remark, with all its content and process, is involved in the isolations of fact which the psychologies present. The entanglement is found in both directions. The conversational remark can not be established except in connection with psychological activity; no specification of psychological activity can be obtained except in terms of those wide procedures for which the conversational remark stands as adequate sample.

Currently the psychologist's position is that he can study much of the material of the conversational remark in his own terminology; that he can then assign his psychological fact to a locus *in* an animal organism; that he attunes himself thus to 'science'; and that, therefore, he has little need to look closely at the conversational remark in its own status, and still less need to *see* it directly. *If* the psychologist were making even a moderate success of his procedure, there would be little in this to complain of. He is, however, making no success; this we have established in Part I, in the inspection of his many warring 'systems.' Sometimes he slips the 'social' tacitly into his reading of the 'psychological'; sometimes, facing it more directly, he proclaims its reduction to psychological terms; again, almost before he is aware of what is happening, he finds it overflowing his entire field.³

As against the current 'psychologist's position,' then, the 'social position' takes the form that all psychological presentations must themselves be examined as formulated in the conversational remark; that the 'locus' of the conversational remark as behavior of men can be established just as securely in the physical and vital worlds as can any specialized psychological presentation—indeed, more securely; and that the 'social' attunement with the general

3. See chapters IX and XI; in particular, the 'segments' of Watson, the 'products' and 'conditions' of Madison Bentley, and the 'biosocial' of Weiss.

procedures of modern science is superior to that which is claimed by the specialized psychologies.

So far as our own investigations are concerned, this 'social position' is not to be taken as in any sharp opposition to the 'psychologist's position.' Sharp oppositions in such an issue are entirely phases of extraneous and irrelevant disputation. Here, where research alone is in question, the claim is solely for the right to see, the right to hypothetize, and the right to attempt better organization of the contrasted envisionments and hypotheses.

The issue here is most emphatically not one which can be settled on the basis of the satisfactions which any particular man gets out of his own method of procedure, these being determined in the main by his life-long conventions of expression. Nor will it be settled by the efficiency which any construction may show in some single, specialized region of research. The requirements of wide general construction for many related regions of research will be decisive in the end.

The geneticist, after securing certain exciting results in his laboratory, looks abroad at situations called 'social,' and at once concludes that if he could manipulate the 'genes' he could manipulate the 'social.' Understanding by the word 'social' merely a few odds and ends of conventional puzzlement, and never attaining direct observation of so much as one single typically social phenomenon of inquiry, he nevertheless proclaims that the future of sociology is in his hands. His underlying attitude is that of protest against the mental-social abstractions. With that we have the most complete sympathy. But when he proceeds to convert his 'protest' into the categorical affirmation of a construction adapted only to the few fragments of observation he has made, he runs far beyond his proper sphere.

The psychologist abhors such crudity, but he is on no firmer ground himself with any of his conventional psychological interpretations of the 'social.' His psychologist's protest against social 'abstractions' is sound; his default in direct observational inquiry is, however, none the less mani-

fest. The physicist, in his turn, has a full right to project his techniques and methods of observation in antipathy to the various 'abstractions' and 'personifications' made by other sciences, but his strength lies in his protest, not in any direct construction he can now make. Criminologist and psychiatrist exhibit the confusions at their worst; each individual worker may be satisfied with a particular combination of motives and lesions for his interpretative technique, but not often are any two workers in these fields satisfied with the combinations set up by their confrères, and the whole lot of them together rate no higher than a single minor detail in the wide field of social investigation.

The comment that was made after examining the status of the State as 'fact' may be generalized for all social fact. If the 'social' is not specifically social fact, and in definite technical organization with respect to physical and vital, and, contingently, to psychological fact, then the word should be dropped from the scientific vocabulary. It should be allotted at most a casually descriptive application, but should disappear entirely from direct and deliberate research. If, on the other hand, the social is 'fact,' then concentration should be made upon its observability; and all the reference, all the 'meaning,' all the application of the word should be held closely to the immediately 'what' of our observation.

It will only be through an extended study of both social and psychological aspects of behaviors, and by organizing them together in their technically behavioral form in contrast with the techniques of physics and biology, that firm construction can be obtained. To accomplish this we must first undertake a further study in greater detail of communicational phenomena as they can be observed in their own right.

2. OBSERVABLE BEHAVIORS

XXIII. THE DICAUD

Conversational remarks—specific instances of the event, a ‘speaking-heard’—are now established:

(a) as directly visible in test cases;

(b) as capable of expanded observation in scientific presentations that meet the requirements of durational and extensional construction;

(c) thereby, as legitimately factual in conformity with the established standards of scientific factuality; and

(d) as displaying, in such factuality, a technical differentiation from the specifically physical, and likewise from the specifically vital, facts and problems of scientific research.

This specific factuality, as set forth in (d) in accordance with the characteristics (a), (b), and (c), lies within that general range of phenomena to which the indeterminate word ‘social’ applies. Again, it can nowhere be found except in situations to which that other indeterminate word, ‘psychological,’ applies. Whether regarded from the social or from the psychological point of view, it is equally behavior of men.

If we have established the right to make a direct study of the conversational remark, the obligation is at once upon us to proceed with the study. In the advanced sciences the fortunate workers have their backgrounds of investigation definitely presented, so that they can confine themselves in the main to precise determinations of fact within the given frame. In our case we have no such good fortune. While continuing our efforts to fixate our fact we must keep a steady eye upon its background and setting. The illustration from the “figure and ground” of contemporary psychology,

as it was employed in the discussions of a preceding chapter, may well remain with us in cautionary force throughout all our procedure.

Ever present, blurring the picture, is the influence of the words 'individual,' 'psychological,' and 'social.' Stress upon the dangers of these words must come as a refrain at every step we take. I therefore repeat: The word 'social' is before us still with the values merely of preliminary descriptive reference; hence, also the word 'psychological.' Upon the word 'individual' even less dependence can be placed.

By the word 'psychological' we may understand for provisional convenience, and so only, that in the examination of behaviors attention is being roughly directed towards the 'separately-considered' or 'individual' human organism.

By the word 'social' we may similarly understand that attention is being roughly directed towards behavioral situations which are under inspection as involving many organisms in what we call 'society.'

Where the word 'individual' appears—and we can not escape its occasional incidental use—we must take it as a hint at a region of problems, and never as itself a definite report upon 'fact'; thus it has been used above in connection with the word 'psychological.' Coupled with 'psychological,' or contrasted with 'social,' this word 'individual,' no matter how noisily paraded, brings no aid towards the clarification of either of the other terms. Its own definite meaning, its own definite factual reference, must certainly await, and may not precede, definiteness for the words 'psychological' and 'social.' The pathway to any future knowledge which will include greater precision in the use of these indeterminate words is through the close study of facts in detail, under analysis and under synthesis as well.

The word 'behavior' is in better state than these others, since it conveys both psychological and social reference, without premature commitment to excessive stress on either, and with freedom for either to develop in whatever form continuing observation may justify. As behaviors, moreover, all of our phenomena of inquiry are entitled to

their own direct technical examination in such distinction from the techniques of the physical and vital sciences as they can prove they require.

Our first need is to hold closely before our attention whatever phenomena we take up for examination. One important and necessary aid towards achieving this is to give the phenomena names, and to specify as definitely as we can the range of application for the names we give. However, such naming as is employed here will in no case be sought under the Aristotelian canon of identity; nor will it imply any form of observation set up under the influence of the Aristotelian language theory. We have before us no 'Aristotelian Effect' whatsoever, and we can use no names of Aristotelian implication. We are out of the region of mental, logical, or presumptively philosophical control, and within the region of scientific or tentatively scientific observation. The naming that is required is of the type for which the differentiations of genus and species furnish a model. We observe always the specific instance; it is the 'individual case,' and it is 'individual' merely as it is taken as an instance of, or as belonging to, sub-species, species, genus, and higher groupings. To adopt such naming is not to attempt to apply a biological technique to a social or psychological field. It is, instead, to take that which is germane to our needs in the naming procedures of physics, chemistry, and biology, and to extend it, with such modifications as we may require, across our phenomena.

The phenomenon before us is the conversational remark, as an instance of vocal speech. I shall name it the *dicaud*, compounding that word from the Latin verbs *dico* and *audio*.¹ The *dicaud* is an event before our inquiry, and a presentation of that event as observable object or 'thing.' It is 'vocal speech,' but not vocal speech as assigned for its existence and locus either to a 'mind' or to a single animal

1. See chapter XVIII.

2. A more orthodox form of compound would be 'dictaudit.' For convenience this is compressed into 'dicaud.'

organism. It is an instance of speaking-heard in a construction in which any isolation of the 'speaking' alone, with no functional inclusion of the 'hearing,' is an arbitrary severance of a functional phase from its functioning whole. For locus it requires the speaking-man, the air (or other medium of transmission), and the hearing-man, all three, either as directly and immediately visible, or in an extended construction of observability.

The dicaud can be identified and named as a presentation in a mechanistic space. The segmentation of such a space that is necessary for its inspection is wider than the segmentations commonly in use for describing linguistic phenomena; so far as our observations have yet gone, however, the space-type itself does not require or undergo transformation.

The dicaud, as so observed, is nevertheless an imperfect or incomplete observation. The conversational remark is 'about something.' Its status in this respect is not different from that of 'speech' inspected as 'mental faculty' or as neural or muscular activity. In these last-mentioned cases this characteristic of 'being about something' is currently discussed, perhaps in terms of 'meaning,' perhaps in terms of 'reaction system.' In the case of the observable dicaud, the way to extend observation to this 'something' that the remark is 'about' must be learned. If our standards of observability are to be maintained, they must apply to the full situation as well as to the aspect or 'part' we have thus far identified. The 'rest' of the situation, the other aspects, must be present, if not to any given pair of eyes at any given moment, then in the constructional frame of observability itself, within which we make our study. If the 'speaking' is 'dog,' and the 'hearing' is 'dog,' then 'dog' as reference—as object, fact, referent, meaning, or whatever one may call it—must be present as aspect or phase of an

3. Words such as 'object,' 'reference,' 'referent,' and 'meaning' can be avoided in the text no more easily than such words as 'individual,' 'social,' and 'psychological.' In our uses of them their status is similar: a mere preliminary hinting at situations of great significance which

event that is richer and more complete than that of the dicaud taken, as we have thus far taken it, 'by itself.'

This wider event, which includes not merely the speaker, hearer, and air, but also the embodied reference, will be named the *dicaudane*.⁴ In the present chapter the dicaudane will not yet be ripe for consideration. In its later study, despite the fact that all the issues of 'meanings' are involved, we shall not desert in any way the general constructional frame of observation we have established. For the observation of the dicaudane, however, no mere widening of mechanistic segmentation will suffice; a much more adequate development of spatial-temporal observation will be required. Here our knowledge of the existing psychological situation as to space-types and segmentations, as secured in Part I, will be of aid.⁵

Neither dicaud nor dicaudane is before us in any isolation as 'existence'; in either case what we observe is behavior in interplay with other behavior. In this respect both are characteristically scientific observations. The dicaud may be examined in detachment and made an object of philological study. It may be taken in partial observation in either its speaking locus or its hearing locus. Here

they crudely indicate. Not until we have established the full constructional frame within which precision may be found, will it be possible to give definiteness to these words or substitutes for them. Consider, for example, the word 'meaning.' It lies at the heart of all phenomena called 'psychological'; without its implication no psychological discussion whatever would be possible; yet the psychologies show wholesale confusion with respect to it. Here are a few ways in which the psychologists talk about it—they usually say 'define'—which I chanced to jot down while gathering the materials used in Part I: "abbreviated and anticipatory reactions"—"a person's nascent movements"—"an object"—"a complex movement system"—"response variations"—"an indicated reaction which the object may call out." Such phrases may give some private, personal satisfaction to the men who use them, but they are all manifestly evasive of the very subject-matter of investigation itself.

4. The suffixes used in this terminology, and their range of application, will be explained in chapter XXV.

5. See the recapitulation in chapter XIII.

it may undergo physiological or psychological inquiry, or it may be studied in intra-organic organization with other behaviors similarly localized. The complement of meanings in the dicaudane may be segregated and given similar specialized study, either with respect to an 'organic' or to a 'social' locus. Dicaud and dicaudane may also be observed and studied in organization with other 'social' behaviors; and here there is endless opening for elaborated inquiry. Never, however, in any of these ranges of inquiry, need phenomenal identification be lost.

Such complex situations run far too wide to come under analysis in any single book. Our immediate inquiry will be confined to the single dicaud, and to its direct setting as behavior in space and time. This will lead us to the examination of other observable phenomena closely akin in classification, and to inspection of certain situations that are found at the 'beginnings' and 'ends' of dicauds if successional time is applied to them, or in their various functional phases if a more adequate durational presentation is secured.

The dicaud has been called an instance of 'vocal speech'; it is, therefore, likewise an instance of 'speech' in the wider senses of that word; it is also—since the words 'speech' and 'language' have closely similar ranges of application—an instance of 'language.' In an earlier passage, when undertaking a demonstration of the direct observability of the 'conversational remark,' we allowed the word 'speech' to apply to the isolated activity of a speaking man. It is necessary to compare these two applications of the word, first to the speaker separately, and then to the dicaud, and to justify our present application for the case in which we employ it. The simplest way to accomplish this is to go to the dictionaries. Since the words 'speech' and 'language' coincide so closely, I shall take the two words together, and attend only to what can be reported for them in common.*

6. The many minor specializations of meaning may be dropped from consideration, such as 'an oration' or 'rumor' in the case of

Etymological detail is often misleading, and never of assured import. The dictionary to which we shall now turn is, however, not to be taken as a mere arbiter of elegancies or of conventional precisions. Far beyond that, it has value for us as a compact record of critical stages in man's attempts at the partitioning of his knowledge, of the devices he has used, and of his hesitating and wavering steps where difficulties have appeared. Truly enough, these 'definitions' and their connected 'meanings' are deeply involved in what is called the 'history of thought,' and much interest might possibly lie in research hopeful of distinguishing their assumed 'intellectual' from their assumed 'linguistic-cultural' sources. With that type of issue we have here nothing to do. We shall take the dictionary as a reporter of certain linguistic behaviors of men, with these behaviors as reflections of the manners and forms in which men have come to make their observations of the world around them; we shall disregard any issue as to whether the dictionary presentations are precipitates from 'philosophy,' or, in contrast, the sources and incentives of philosophic elaboration.

For the words 'speech' and 'language' alike we find three distinctive differentiations of emphasis, three distinctive forms of linguistically specified observation, applied in common across a single more general presentation: that, namely, of communicative behavior, to which no one of the three differentiations has ever yet succeeded in giving a satisfactorily complete statement. For the convenience of the immediate examination we may employ labels which are solely of momentary use—which will retain, that is, no values for the organization of our own further analysis. Let the label 'capacity' present the case in which language and speech are referred to individual origin or initiative, as such

'speech,' or the 'language of flowers' or of 'gems' in the case of 'language.' The tendency to employ 'speech' for vocal cases, as contrasted with 'language' in more general application, can be omitted as itself one of these minor specializations. Later, in another connection, the distinctions of vocal, written, gestured, and other forms of communication will come before our attention.

origin or initiative is assumed both in the practical procedure of every-day life and in the formulations of mentalist, mentaloid, and other similar psychologies. Let the label 'product' stand for the case in which language and speech are seen as spread out 'socially' in some form of greater or less independence from the individual user. Let the label 'act' name a third case, which quite definitely appears, in which language or speech as an 'act' is inspected as it presents itself in the world upon being emitted by a 'man.'

What we learn from these dictionary specifications is that men, by and large, have not been able to get along in their practical procedures of perception, identification, and communication with one another, by always treating speech and language strictly and literally as something that individual men have, do, or possess (capacity). They have likewise found it necessary to observe and speak of language as if it had a kind of separate presence or existence of its own (product), which the individual man must confront much as he confronts other facts of his world. Even these two presentations have not been enough, the dictionary tells us, and men have found it necessary, from time to time, to insert 'go-between' definitions, bastard descriptions of the phenomena, in which speech and language appear as 'acts' which, after originating in the man, proceed then to detach themselves from the 'man himself,' and thus issue forth into the world with a certain status of their own *qua* 'act.'

Comparing the first two of these differentiations, those of 'individual' and of 'social' reference, the one is just as standard as the other. The former is a necessity, whether in terms of mentalist 'faculty,' of behaviorist 'movement-segment,' of mentaloid 'brain-cell,' or of purely functional or operative psychology. The latter is implied by the 'abstractions' and 'historicisms' and by the other cultural and

7. The small condensed dictionaries will, of course, not yield these distinctions in sharp forms. Murray should be correlated with other large English dictionaries, and the dictionaries of other modern languages should also be taken into account.

social presentations, and is a necessity for the wider behavioral inquiries.

If, then, we make a selective observation of the dicaud and regard it as a 'social' specification, we have, so far as the dictionaries go, just as sound justification for calling it an instance of language or of vocal speech as the phoneticist or psychologist has for specifying his own form of observation in that way. We make a choice, admit it as a choice, take no step unfriendly to the alternative choice, and go our way. We regret that the dictionaries give us no sharp terminological differentiation for these two types of observational reference, and that they offer, in the main, only distinctions which run crosswise of both words; but such is the case and we must put up with it. By introducing the name 'dicaud' in the region of one of these forms of reference we do no violence to the situation, but instead help to overcome the defect.

All of our inquiries, no matter to what extent they stress the formulations of language, are directed towards 'fact.' As regards the first two types of dictionary differentiation for speech and language—both that which implies the 'social' and that which asserts the 'individual'—we have ample reason to recognize that they are 'factual' in reference and intent, however inadequate as yet may be the development which they show in modern science.

How is it, now, with the third type of dictionary definition, that in terms of 'act'? What is the status of this form of definition with respect to the other two? What is the status of any such 'act' in a research-world of 'fact'?

If we had here a mere curiosity of phrasing, or a mere subtlety of speculation, we should have nothing worth a moment's pause for discussion. Unfortunately, however, what we have is a putative basis for a very common manner of construction and inquiry into psychological and social, and even, in some outlying backward cases, into physical phenomena. It is a linguistic process more active in impli-

cation than in express formulation, and for that reason all the more in need of being exposed in a clear light.

In the more advanced sciences, of course, the presumptive 'activity' taken as in detachment from some 'substratum of action,' has long since lost all respectability. Consonantly, recent psychology has been laudably earnest in its desire to deal with 'activities' directly and not in the differentiation of 'act' from 'actor.' Looking backwards across older psychological construction we can identify with fair accuracy the atmosphere of inquiry within which 'act' maintained its appearance of plausibility. The 'actor' was 'mental,' and he faced an 'outer world' of 'facts.' He had his dealings with this outer world by way of his 'body,' which thus acquired a certain obscure intermediacy of presentation. His 'body' could be envisaged as a 'locus' or 'home' for his 'acts.' The 'act' was, so to speak, 'corporealized' apart from the 'actor,' and yet not wholly as a case of extrapolated 'outer' fact. We must not think that the older psychologist would have stated his procedure exactly in this way; herein, however, lay his obscure reliance.

While this fantasy has departed from our best psychological work and may be assumed to be on its way out of psychology altogether, it still retains a very peculiar power in social investigation. The typical student of society starts by positing a psychological 'individual' as his basic fact; nevertheless he must deal with social phenomena as something of a different order from individual phenomena. In order to get a formal presentation for his own materials of inquiry, he implicitly accepts 'act' as floating off from the 'individual'; he uses it as a building-block for his 'social,' and out of a complex of such 'acts' he presumes to present a social realm distinct from the realm of the psychological. This procedure, though evidently illegitimate when closely looked at, is made to suffice by default.⁸ A vague and ob-

8. It is, of course, always legitimate to pick out any specialized observation of activity, call it 'act,' and study it, either in detachment or in organization with other similar specializations of 'act,' but never as a general construction of or for observation.

scure 'social' is thus associated with a vagueness and obscurity of 'act.'

Our question is whether any constructive factuality can be ascribed to linguistic phenomena presented in a differentiation as 'act,' and it will be helpful again to turn to the dictionaries taken as recorders of linguistic behaviors, with these behaviors in turn intricately connected with observation and with all other human behavior. We examine the issue, that is to say, not with the intellectual impudence of the moment, but in terms of hundreds of generations of men's experiment and experience, and with an eye to the hints that the pasts and presents of the words give as to their probable futures.

'Act' and 'fact' and their Latin predecessors *actum* and *factum* go back in the records to closely similar sources. As we first observe them they both make report on the 'thing done' or 'performed.' Implications of extrapolation developed slowly for the *factum* in distinction from the *actum*, and these can be traced onwards into late stages of Latin which exhibit stresses similar to those of modern factuality. In English there is hardly a meaning for either 'act' or 'fact' which has not, at one time or another, been applied to the other. Only in the recent outcome have the senses of 'a doing' or 'a thing done' been stripped away from 'fact,' while the senses of 'reality,' 'actuality,' and 'accomplished fact' have become in counterpart obsolete for 'act.' For the control of our current modern usage, the dictionaries stress for 'fact' that which stands forth, so to speak, in its own right; for 'act' they are driven to discussion in terms of 'deed,' an even vaguer word, which takes special reference to performance by an 'intelligent being'—in other words, by an 'actor.' The 'act' requires an 'actor,' but it also requires its own differentiation of 'actor' from 'act.' In this setting 'speech' as an 'act' receives dictionary classification in a separate compartment from 'speech' as a factual reference in terms of the 'individual' or his 'capacity,' and from 'speech' as 'socially-spread' fact. But

the distinction stands as arbitrary and artificial in the light of modern progress in knowledge.

This long linguistic history is illuminating both with respect to the greater extrapolations of 'fact' and the minor ones of 'act.' From common behavioral origins men have developed distinctions to meet the needs of their times; they have struggled multifariously to crystallize these distinctions into forms of permanent value; they have failed in their attempts. It is wholly naïve for anyone to believe that the linguistic convenience of his generation is the true master of his knowledge; it is worse to believe that present convenience will control all the knowledge of the future. The obligation is always to appraise formulations and situations of formulation together.⁹ The present-day appearance of the distinction between 'act' and 'fact' as the dictionaries retain it, and as it enters indirectly into very much sociological construction, represents a situation of knowledge in which the physical sciences are highly advanced, but in which the psychological and social sciences are still struggling to tear off their swaddling clothes. To employ the word 'act' in any constructive differentiation from the word 'fact' is to swaddle the phenomena; it is a primitive device for fixation; it must be thoroughly appraised and discarded before rapid progress in knowledge can be expected.

The status of scientific inquiry into vocal speech is today as follows: The investigator has before his consideration various events, including speaking, hearing, and the transmission of sound by air or otherwise. He may regard speaking as 'activity,' and with due caution he may describe it as 'an activity' of 'an organism.' Due caution requires him, however, always to keep an eye open to the coherence which his method of expression retains when its range of applica-

9. The postulatory development of chapter XVIII may be seen as an effort to inspect our modern problems of knowledge in their wider linguistic-historic settings. The immediate discussion in the text is an illustration of such inspection.

tion widens. If he recognizes speaking as an activity, he must also recognize hearing as an activity, and in a similar organic setting; beyond that he must accept the transmission as activity, though this time not in an 'organic,' but in a physical scheme of interpretation. Given this full construction of activities, one investigator may specialize on the speaking-activity, another on the hearing-activity, and another on the physical interconnection. With equal legitimacy, however, still another may choose to center his attention upon the full speaking-hearing event, the dicaud. Properly presented and consistently expanded, there is among these various cases no radical difference whatever with respect to the factuality of the inquiry.

When, however, speaking is regarded as an 'act' in any sense in which the word 'act' carries implications breaking away from those of the word 'fact,' the investigator will, in effect, be inserting between the organic activity and the wider factual presentation a duplicative phenomenon, the 'actor.' Merely as duplicative the 'actor' is illegitimate; beyond that, efficient science insists that the activities it examines must come before it directly, and not in any such shadowy effigy, and it regards the pseudo-presentation, 'act,' as fracturing the very frame of scientific observability itself. Extend observation fully across the phenomena in coherent terms, and the 'actor' must fade, either into the organism, or into the wider 'social' fact of language, whatever this latter may prove to be under more thorough study. That the 'actor' is a harmful complication appears at once when we proceed from speaking to the remaining phases of vocal speech. Where the activities under examination are centralized too heavily in the 'act' of speech, hearing tends to become a 'passivity,' although such 'passivities' have no legitimate standing whatever in scientific inquiry. Likewise the intervening air-waves tend to be disregarded as incidental, the full physical-vital setting is lost, and the procedure, even though the investigator does not himself recognize it, remains one in the tradition of the old mind-language. Here a radical difference shows itself as

over against the procedure in which the dicaud is made directly observable.

We may then say that the observation of the dicaud remains impossible wherever the old mind-language governs the work of observation, or where any degenerate derivative of the mind-language governs, or where obscure implications arising out of it retain their influence. Mentalist, neo-mentalist, and mentaloid psychologies alike all suffer under the inhibitions of the older conventions. In the more modern constructions in which organisms and their behaviors in social situations are taken as observably before us, the dicaud is not only a possible and practicable observation, but it is precisely obtainable in the very form of construction in which the speaking-organism and the hearing-organism are scientifically observable; the difference is strictly one of selective attention for efficiency in observation.

When we first examined the dicaud in chapter XXI, at that time still describing it as the 'conversational remark,' our problem was in a most general way that of the legitimacy of any such selective observation. We found that the conversational remark, as 'event,' was entitled to be inspected as a 'whole'; that under such inspection its 'parts' were functional phases of it; and that it was just as legitimately before our consideration in physical 'body' as any other phenomenon of scientific inquiry. It is now necessary to expand somewhat our description of it, even though we must cover in part ground already touched upon.

The dicaud is a presentation in space and time. This does not mean merely that it can be dated in a superficial way by a calendar, or located by a survey or map. Calendars and maps are devices which men have secured for their practical needs, and which have been provisionally extended by history, anthropology, geology, and astronomy for their further descriptive uses. To assign a particular dicaud to a minute, hour, or day in December, 1933, and to a particular room on Twenty-third street in New York City, may be

useful for many purposes, but by itself it does not yield a construction in space and time: What is required for the dicaud, if it is itself to be an observable presentation, is that it possess its own definite extensions and durations; without such extensions and durations we have no dicaud as event under observation.

These extensions and durations are in first approximation those of the Newtonian mechanics, and they suffice for the primary examination of the dicaud. Here calendar and map adapt themselves well as clues to study. But there is no magic about calendar and map through which they can carry their authority beyond their demonstrably legitimate uses. Especially is this evident when we remember that as we proceed with the study of the dicaud all the 'meanings' that it conveys must be brought into the inquiry. For these latter aspects of the event, calendar and map are scanty and bare; they frame so little of it that, where they are assumed to control, all the 'meanings' tend to evaporate away into non-spatial, and often non-temporal regions, which is to say, into the non-observable. Spaces and times, extensions and durations, must therefore be free for the dicaud to develop in conformity to our developing observation of it.

The dicaud is not necessarily the conveyance of a single isolated 'word.' 'Word' itself is not a clear specification when one investigates language as social behavior. It is clear enough for such immediate practical purposes as an examination of its composition out of letters of the alphabet, or of its historical changes in spelling. One may cut a 'word' out of a printed page, or find one in a dictionary. One may even worship a 'word' as a magic key to the universe—it has often enough been done. But all of these specifications are incidental to the study of the dicaud. If we say 'run fast' or 'scoot,' the fact that we have two 'words' in one case, and only one in the other, is incidental; just as incidental as is the difference between a colloquial and an established phrasing. There is no basic behavioral difference between 'amo' and 'I love.' A shriek, which is

not what we commonly call a 'word' at all, and which can find no place in a dictionary, is a dicaud—not only in the immediately presented case, but probably always in full long-term construction.¹⁰ On the other hand, a 'word' may expand into a phrase or sentence or theory, and remain similarly a dicaud before our observation. A physicist may say 'electron' to a fully comprehending colleague in a definite situation in discourse and accomplish thereby the same work that would require a dozen or two sentences to an assistant, or a long lecture to scientists in other fields—work that he could perhaps not accomplish at all by means of a dozen volumes given to a layman to read. Here, as in all other research, what is specified for investigation is functional to the investigation itself. The philologist may pick out an element in one form, the psychologist may choose it in another, the jurist in another, and the man who specializes directly on the 'social' in still others. This last investigator will generalize his procedure; his purposes are wider, and he will therefore analyze and classify and compare and construct in more general frames of observation. The physicist, at the far extreme, establishing the factual reference of inquiry in his own peculiar form, may strive to free himself completely from involvement with dicauds. All that is as it may be, and in every case it rates as special procedure for particular purpose.

The extensions and durations of the single dicaud are the very minimum in which we find the phenomena of vocal speech, or in a more general sense, of language, if the full range of the factuality of language is to be covered.¹¹ The extensions must be wide enough to include the bodies of

10. I must not here be understood as making flat assertion of fact. It is, however, a reasonable construction backwards in evolutionary durations that animal cries have significant appearance and maintenance only in a construction of other animals to hear them. Investigations of the future will make the definite determinations.

11. Always reserving, of course, to anyone else the right to 'mean' by the words 'speech' and 'language' something different from what is here presented, but, incidentally, also requiring him to stick to what he declares he 'means.'

two men in action, and the intervening air or other medium for the conveyance of sound. The durations must be long enough for the complete procedure of initiation and reception in whatever more accurate specifications of the dicaud we may secure.

The above assertions, however positively made, do not interfere in the slightest with the right of any investigator to carry on his work in any specialized presentation he selects. He may divide the phenomenon, or extend it, in whatever way best suits his needs. He may employ any space-type or space-segment that seems most useful to him for his immediate purpose. Here the greatest freedom in inquiry is desirable, but it should be a freedom in deliberate selection, not one of dictum. Just as the dicaud itself is a selection within a wide and intricate field of behaviors, so the minor specializations of speech are selections within the field of the dicaud. The phoneticist is entitled to his selection and the comparative philologist to his; the psychologist may vary his selection freely in accordance with the change in his objectives, as one or another type of problem confronts him.

When the physiologist assumes that the events he studies occur within the space-segment of the body, his frame is not wide enough even to include sound, if sound requires air-waves outside the margins of the body to pass from voice to ear of the vocalizer himself. The behaviorist, using a movement space, can give a somewhat more adequate description, but his chosen phenomena include neither 'meanings' nor 'communication.' His practice has been to inspect his 'movements' *as if* they themselves carried 'social' characteristics, or perhaps composed the 'social' by discrete addition of movement to movement. As for 'meanings,' the behaviorist examines them, perhaps as 'objects,' perhaps as 'reactions,' and at the most succeeds in annexing them in sketchy and imperfect organization. All of these procedures are of course useful as far as they go; that is to say, when held strictly within their prescribed frame of construction. Thus among the behaviorists they have led

to the series originated by Watson and elaborated variously by others, which includes loud speech, *sotto voce*, inaudible throat, tongue, and lip movements, and 'silent and invisible' speech. They are dangerous only when the inference is made that a full display of the essential phenomena of speech is thereby given. In Watson's own case, as we have previously seen, they drove him to re-entry into the mentalist temple by way of his "whole bodily organization at work implicitly." Give this series status, however, as a special presentation within the general construction of the dicaud, and it can take its place without breaking in any way the spatial and temporal framework of description. The specialized investigations within the field of the dicaud have, at their best, something of the status of histology as over against physiology; they deal with certain of the tissues of speech rather than with the living process. At their worst—that is, when values are assigned to them far beyond what they possess—they must be compared rather with the electric current when the circuit is broken; all is present except that characteristic activity which is electricity itself.

The dicaud presents itself as legitimately observable fact in cases in which either speaker or hearer is not immediately before the eye of the observer. Its spatial and temporal frame of construction extends to those 'parts' or phases of it which are not attested to by immediate ocular evidence. General justification for this manner of observation has been given at the close of chapter XXI. The whispered 'pst,' mouth to ear, is close and quick. The mountaineer's yodel may carry for miles and require seconds of time. If a call is echoed by voices or by booming drums across widely distributed African villages, it is still fact as dicaud. No matter what extensions of space or what durations in time are needed, they are legitimately factual as found. The difference is not one of general construction. No more is the insertion of telephone instruments and wiring between mouth and ear, even though the wires reach half around the globe, or the insertion of radiation in wireless

telephony. If a graphophone disc conveys the voice, the duration must be long enough to include the disc's storage. Wire, radiation, and disc are merely special cases of physically-described transmission—substitutes or supplements for 'air' in the presentation, but of no further basic significance.

Again, the observational extension to the case of the speaker practising his speech, or to the man talking to himself in the woods, is legitimately made. The conventional constructions build all that is 'social' in language out of the activities of 'individual' organisms, separately presented, and as a rule out of these activities in the illegitimate form of 'acts.' The output is chaotic. Here the construction is in sharp contrast. Starting with the phenomenal dicaud, it presents the 'lone voice' in the woods in an evolutionary setting in which 'hearing ears' have been necessary accompaniments in the differentiation of 'speaking voices'; it identifies the particular case of the 'voice alone' as partial, incomplete, truncated, and lets it go at that, subject to whatever better knowledge the future may bring forth.

Contrasted with the presentation of speech as power or faculty, mediated by way of 'act' into social result or product, the dicaud is now before us as follows:

It is directly observable. It is directly event. It is directly behavior.

It requires neither supposititious 'faculty,' nor floating 'act,' nor physically homeless 'product' for its presentation.

It is deeply involved—as critics at this stage will no doubt be remarking—with all sensational and perceptual activities.

As observed, it is freighted with 'meanings' and 'purposes' and with very much indeed of what we call 'thought.'

Directly in its extensions and durations it is a candidate for the embodiment of many phenomena of inquiry which escape into non-observational forms whenever they are approached from either the strictly organic or from the psychologized organic base.

The test of the dicaud will be two-fold.

Does it build itself coherently into interpretations of the diverse 'social' presentations which now bewilder inquiry?

Does it build itself with equal coherence into our knowledge of the organic and the physical?

If it will so build in both of these directions, then it will assure itself of its own factual status as against all other constructions, whatever factuality these others may establish for themselves within the ranges of their own specializations.

The way to inspect the dicaud at this point is as a bit of preliminary definiteness emerging from a confusion of incoherent presentations.

The way to test such alternative constructions as those of 'faculty' or 'act' or 'product' is to require them to hold clean and close to their own frames of construction without smuggling in any implications of meaning from beyond their own proper forms of presentation; and then to establish whatever freight of knowledge they can bring in their own right.

XXIV. THE COMMUNACT

The dicaud is a specific observation which may be made where situations of vocal 'communication' are found. Communication shows itself as 'of,' 'by,' or 'between' men; but to observe the dicaud directly and impartially one must first strip off all control exerted by such grammatical devices as 'of,' 'by,' or 'between.' The dicaud is event; it is behavioral event; under selective observation it becomes 'object' or 'thing' of study.

The dicaud is not the sole species of communicational event. Various other species are familiar. Our next step is to secure direct observation of them by the same manner of approach, and in the same form of construction, which we used for the observation of the dicaud.

Most words of our every-day language are unfriendly to the observation and report of the dicaud. 'Communication' is one of the very few words which carry with them implications of a favorable nature. We have found the words 'speech' and 'language,' for example, splitting into three types of report, one abruptly 'individual,' one confusedly 'social,' and the third even more confusedly 'mixed.' The fields of reference of these words are thus anarchic, and shot through with incoherence. The word 'communication,' in contrast, has comparatively high clarity of reference.

It is, of course, always possible for anyone to degrade the word 'communication' by interpretative severance into factors which have a specious appearance of precision, such as two 'minds' plus 'material objects.' Let us here, however, look at the word 'communication' just as it stands in our common daily use. In the Latin verb of its derivation the earliest stresses were on dividing and sharing, and the later specialization of stress upon 'imparting in discourse' retained

fully this same communal implication.¹ While the English verb may be so stressed as to emphasize the act of a man who makes a communication, that is not its leading use. As for the English noun, it lacks meaning altogether except as involving two or more participants, and in most of its applications the stress is heavy and direct upon the joint activity. Even the derivative applications of the word, as where the 'communication' is a physical phenomenon such as a passage-way or a document, present this direct observation of happenings among 'men together,' rather than a set of detached events assigned to 'individual' men separately.

Beyond this requirement of at least two participants if there is to be any 'communication' at all, the word has a still broader implication of meaning. There must be something the communication is 'about.' The dictionary may perhaps succeed in setting up a formal definition in terms of two men existing *in vacuo*, regardless of anything else in the universe. And we ourselves may, as we have done in the case of the dicaud, specialize our preliminary attention upon the two behaving human organisms plus the connective media. But in fully factual presentation a communication in which nothing is communicated is phantasmic. Without a 'what' of communication, even the earliest uses of the stem verb are unintelligible. If there was a 'dividing' there must have been something divided; if there was a 'sharing' there must have been something shared. Similarly, if there is an 'imparting' there must be something imparted; if there is a deliberative conference, there must be a subject-matter of deliberation and conference. The extreme hypothetical case of pure souls in pure contact may be interesting to speculate about, but it is no concern of observational research; indeed, if my recollection is correct, it leads invariably in the end to mystic fusion and absorption of the souls themselves.

Because of these pronounced characteristics of the word 'communication,' it is the best word we have available to

1. Dictionary and etymological history are introduced here, as before, not as of theoretical import nor as clinching any argument, but merely as aids to knowledge of human behaviors over longer periods of time.

cover our present more general field of inquiry in extension from our observation of the dicáud. Communication, taken as communicative behavior, is what we set before us. Nevertheless, although its background of implications is favorable, the word is not definite enough for our needs. It indicates well the situations before inquiry, but it does not properly attach itself either to the wider or to the narrower of the two specializations of selective observation we are required to make; and, beyond that, it may too easily be degraded into a mutilated rendering in terms of 'actor,' 'act,' or 'product.' It becomes necessary, therefore, to introduce specialized names.

For the general case of instances of communication, in which men are seen in 'communication about something,' the name *Communicane* is to be used; the dicaudane, mentioned but not discussed in the preceding chapter, is therefore a specific form of the Communicane. For the present we shall postpone consideration of the Communicane—that is, of all cases in which the reference of communication is included—and confine ourselves to the observation of communication in a conventional mechanistic space-form, where we study narrowly and directly the initiating man or men, the receptive man or men, and the connective media.

For the general case of 'men seen in communication' in that specialized observation which provisionally defers examination of the 'what' that the communication is 'about,' I shall use the name *Communact*.² The dicaud, then, is a subclass under the Communact. In this terminology the suffix *ane* will indicate behaviors inclusive behaviorally of the 'referent' in some one of its many forms, while the terminal consonants *d* or *t*, suggestive of imperfection or suspense, will be used for the partial or aspectual observations.

The Communact is no highly erudite or elaborate construction, but the common every-day 'event of communica-

2. I compress the name Communact from the indicated form, Communicat, in order to make its distinction from Communicane more noticeable to the eye in swift reading. Following a convenient custom I shall use capitals for the 'generic' names, but not for the 'specific' forms comprised within them.

tion,' just as we can observe it all the time when we look no further than the two or more men and the intervening physical medium necessary for its appearance; and when we omit the arbitrarily destructive 'interpretations' arising from the conventional or currently prevalent experimental devices which, as we have found, lead always to incoherence in their developed constructions.

The Communact is always *an* event, *an* object, or *a* 'thing' before our attention. But such a name may cover class or subclass just as may other names, such as 'dog' in the well-established genus-and-species manner of classification. This use must of course conform to whatever control is shown by positive observation to be scientifically advantageous.

First to be mentioned as comparable to the conversational remark, or 'speaking-heard,' is the written communication, the case of a 'writing-read.' This may be named the *scriptilect*, the word being compounded from *scribo* and *lego*. The scriptilect, then, ranks beside the dicaud. As in the case of the dicaud, we have to do with the scriptilect always in the specific instance, never in any other construction. Each scriptilect, like each dicaud, is a Communact. Any scriptilect, if it is to be a scriptilect at all, must be observable, either as directly visible, or in an expanded construction of visibility. It must likewise be factual. It must be observable and factual in the same sense that the dicaud is observable and factual.

Where the dicaud involves men's voices, men's ears, and in the ordinary case, air-waves—and without all of these together it does not exist—the scriptilect involves men's manual movements, men's eyes, and light-waves as the connective phase of the phenomenon.

That scriptilect and dicaud appear together in a most intimate form of organization is a fact readily established by observation whenever we watch one man using the printed page from which to read aloud to another man. It is wholly unnecessary to introduce a reference to 'minds' or 'brains' for the purpose of convincing ourselves of this 'fact.' Just

how far 'minds' or 'brains' need to be taken into account in more highly developed descriptions and descriptive interpretations is an important problem for further study, but not something towards which position must be taken in advance. Here, as so often elsewhere, we must first qualify in ignorance before we can begin to learn.

The scriptilect can be directly 'seen' in the simple case. The teacher writes a sentence on the blackboard, and the child follows it with his eyes while the crayon moves. The full event is there before our vision. If the child writes its exercise, and the teacher reads it half an hour afterwards, the mere extension of duration from a fraction of a second to half an hour makes no radical change. The fraction of a second is as much an observational duration as is the half hour. If the former procedure were 'instantaneous' and the latter durational, then we might indeed pause to reflect, but such imagined instantaneities have no standing, either scientific or observational. Increase the durations widely and no difference in basic construction appears. Whether the printed page is read as it falls from the press or a thousand years later, the scriptilect is still before our attention in the same construction of observability.

The difference between air-waves and printed books does not break the generic classification of scriptilect and dicaud as both Communacts. It is well enough known as a stage in the development of knowledge that the mentalist, throwing all stress of attention upon 'minds' in isolation, came to regard the air-waves as incidental, as trivial, as mere nothings in his theory. Books and libraries, in contrast, appeared to him as wonderful products of the spirit or intellect. Such child-like simplicity of observation has no longer any place. Air-waves and printed pages are alike physically-described phases of communication. This difference serves to discriminate the scriptilect from the dicaud as species of the Communact, but it does not otherwise affect their status.

Scriptilect and dicaud are alike in the settings they have in the long historical development of social behaviors. Put a man on a desert island, let him survive through fifty years of isolation, and observe him saying 'Hail' to the sun as it

breaks out from the clouds after weeks of rain. One may say his 'Hail' is not a dicaud in something of the same sense that one may say a man's shattered hand is not a hand when amputated and laid beside him on the operating table: but without the living body, no discarded 'hand'; without the living language, no desert 'Hail.' The man on the desert island may have paper and pen and may write his memoirs, hardly expecting them to be found and read. They may indeed never be seen by other eyes, but the difference is nevertheless one of incident; they are none the less scriptilect.

Until the phonograph appeared, the dicaud was observable only in short durations, the scriptilect often in long; and it seemed an enormous difference. With long-distance telephony the dicaud gained wide extensions which it previously had not had, except as the phonograph disc could travel. Such differences, however spectacular, are unessential in classification. Dicaud and scriptilect alike have extensions and durations. Alike they are visible in simple cases, and constructible in all cases in frames of full observability. Alike for them both, the immediate absence of one terminus or phase, or its far-distance, loses all claim it may make to authority as criterion for classification, and shows itself as comparatively unimportant incident in the observational frame.

It is 'a fact' that 'John Smith reads Plato.' It is 'a fact' that 'Plato wrote.' Such a framing of the 'facts' as wholly independent in small personal spaces and times, though all well enough for many minor purposes, is wholly trivial for any thorough program of investigation. 'Plato-writing-Smith-reading' is a scriptilect, or a set of scriptilects, according as we divide it up for study. If the durational frame is to be used at all, two thousand years, or five thousand, is no more radically significant, *qua* duration, than one minute or one sigma. In the limited mechanistic presentation of space and in the limited successional presentation of time, the difference may continue to seem striking, though even under those presentations it should be prac-

ticable for almost anyone to surmount its influence.³ In the more adequate extensional-durational construction which we shall soon have to use, such differences are wholly insignificant. John Jones may hold a copy of Plato in his hand and have his eyes fixed on the page; and yet, in his case, a scriptilect may be hard to identify, or may even be non-existent. John Smith, on the other hand, in the same apparent situation of book, hand, and eye, may tax observational-constructional ingenuity to secure report of the flashing play of scriptilects. That is as it may be. Varieties of interpretation between reader and writer all have their place. The passing of the manuscript through many copyists' and printers' hands from Plato to Smith may likewise be a phase of the observation. All of this enters into, but does not disrupt, the fuller observation.

What is necessary for the successful observation of the scriptilect in its full extensional and durational form is to cast aside the fictive presentations of the inert book and of the motionless static library with its tons of motionless physical matter on its shelves, and to concentrate attention on the full behaviors, the full event, in which book appears, and in which it reaches shelves and journeys on to readers' eyes. Necessary, also, is suspension of the rigid 'mental' isolation of writer from reader as constructional frame of study. The full event then becomes observable, and increased capacity for observation grows to meet the need. The moon may be seen to swing serenely calm in the sky, but that is not the moon of full astronomical observation and calculation. A bar of lead may be inert and heavy in the hand, but that is not all there is to the active lead of physical inquiry.

3. Perhaps the sole case in which the immediacy of communication is 'felt' and expressed across long periods of time is the religious case, as when the ardent Christian reads words of the New Testament as the direct voice of Jesus to his soul. This is of course a construction of vivid personalizations in an assumed background of mechanistic space and time, and thus remote from our present point of approach.

With dicaud and scriptilect accepted as observable, another presentation which should be assembled with them is at once attainable. This may be taken to include all gestured communication, comprising not merely the common gestures, but sign language, and all contacts, such as pressures of the hand, and perhaps also Braille; however, this latter, according to whatever finer discriminations are made for practical convenience, may perhaps be listed with the scriptilects. For such communications the name *gest* may be adopted. Some theories of the 'origin' of language stress heavily the act of 'pointing' in early stages. They rest, to that extent, in a presentation of the *gest* as basic in language.

In addition to dicaud, scriptilect, and *gest*, there is much other communication between men which can now be given definite locus and classification with a view to its better study. Most of what will some day require investigation in this form is today before us in the veilings of mysticism and superstition. It will include all of those phenomena often spoken of as 'thought-transference.' Into this group fall also the many phenomena of sympathetic understanding and facial interpretation, and perhaps others, such as muscle-reading. Precise lines in these regions cannot possibly be laid down under the limited information the world has thus far accumulated about them. Around them are wide fields of communal behavior for which we have as yet no clear means of specifying the communicative procedures that are involved.

This group of phenomena, covering all pertinent cases in which definite communicative behaviors can be identified under improved methods of observation, may be known here simply as *t-phenomena*, the 't' being indicative of the common expression 'thought-transference.' Much study leading to their better understanding will undoubtedly be made by specialists in animal behaviors. The migrations of birds will at once come to mind as perhaps exhibiting such phenomena, and anyone who has lived in a squirrel

country will know of the strange and sudden migrations which often occur. Expeditions, when water supply fails, to regions which the squirrels in their way—whatever it is—‘know of’ as better watered, appear here; and also other migrations in which precision in the formation of companies and in the selection of directions and times of travel indicates the strong probability of some definite form of communicative activity. That crude word ‘instinct,’ once so portentous but now an article of faith only to our most confirmed recidivists, in this region of inquiry may likewise attain further progress towards its clarification.

XXV. THE COMMUNICANE

Attainment of observation has been simple thus far. The initial obstacles vanish as we progress in our analysis of the common distortions of vision; freedom is then gained in the choice of phenomena at which to look. The Communact, as we now see it, is neither more nor less than a 'word' or 'sentence' or other instance of language, taken directly as the behavior of men. The Communact is the very 'word' that the dictionaries exhibit; it is the very 'sentence' that the philologies and grammars study. It is this 'word,' however, not as shrunken down to flat projection or sketch, but in wide dimensions and perspective in the world; it is this 'sentence,' not in mechanical composition, but in action. It is 'word' and 'sentence,' one or the other or both, just as we find them in nature, passing from man to man *via* the air or other physical media of communication; and presented thus in geographical extension which may be wide, and in duration of event which may be long.

Whoever will, may refuse to observe the Communact in this way; he may decline to recognize it as 'fact'; he may readily say that its observation is useless or repulsive to him, or that its recognition as 'fact' is trivial or illusory when he compares it with the great 'actualities' of 'human speech' with which, he feels assured, he makes immediate contact in knowledge. One can hardly take the flat position, however, that the observation of the Communact is impracticable or impossible in a good legitimate sense of the verb 'to observe,' or that it is even excessively difficult.

We have now to turn from the Communact to the Communicane—to the case, namely, in which the references, meanings, and objectives of communication are included along with the Communact in the direct observation itself. For the initial observation of the Communact, the ordinary Newtonian space and time has been a sufficient frame of

presentation. For the Communicane the situation is not so simple. It is because of the greater intricacy of the situation, and because of the greater discipline and training that is required, that I have thus far introduced the Communicane merely for the purposes of orientation, and that I have confined our analysis to the Communact, even though this latter is but one aspect or phase, one functional member, of the Communicane.

To observe the Communicane, to make progress in its study, to secure, indeed, any import at all from its discussion, requires the breaking down of some of our conventional philosophical, psychological, logical, and practical barriers. Such observation and progress does *not*, however, require the formal repudiation of the older constructions; nor is the formal adoption of any one particular substitute necessary. Our need is freedom in hypothesis for purposes of exploration and research; our only requirement, then, is that alternative constructions postpone or suspend any power they may claim by divine, dogmatic, or conventional right to control the course of provisional inquiry. Such a requirement is nevertheless heavy enough, for it must include postulatory emancipation from assured dependence upon an absolutist connection between 'word' on the one side and 'thing' or 'fact' on the other, even to the last posited 'key-word,' or 'thought' or 'feeling' of construction. On this account a comprehension of the reasoning in Part II of this book will be necessary to permit the successful reading of the following pages—not the acceptance of that reasoning as valid, but its thorough and fair appraisal.

We undertake first a sketch in broad outline of the characteristics of the Communicane as it is to be observed selectively in the situations in which we find it.

To be observable, the Communicane with its full freight of meanings must, like the Communact, be capable always of entering our observation as object or reference of other linguistic procedure. Although it includes its own object or reference, it must enter always in the specific instance,

however or wherever we deal with it, and never as some generality of discussion.

Compare the specific presentation 'Communicane' with another specific presentation, namely, 'dog.' 'Dog,' it is true, has been of active concern to men as a Communicane for some hundreds of thousands or millions of years, while 'Communicane,' as itself a Communicane, has no such long history. The presentation 'dog' has been sharply stamped upon perceptive and linguistic attention as 'substantively existential,' and it still maintains itself thus in many quarters—more particularly among small boys. Comparably sharp stamping cannot today be asserted for 'Communicane,' even in the attention of the smaller groups of specialists. However, the type of sharp outline, the 'substantively existential,' which 'dog' has had, and continues popularly to have, must not be confounded with scientific precision nor be assumed to furnish any final test for definiteness in knowledge. The 'dog' presentation of modern biology is vastly transformed from the 'dog' presentation of the cavemen, just as that latter was, no doubt, from more primitive human and sub-human reactions—all in one long continuous line of development. The 'dog' presentation in science today is more dependable, not less, than that of older days. The situation is not different for 'Communicane,' however different is the stage of presentation. Approximations to the Communicane, and defective presentations—'abstracts,' 'historicals,' 'psychologicals'—are to be found everywhere around us, their history and status easy to explore. Alike in both cases, those of 'dog' and of 'Communicane,' special direction and concentration of attention, and special training and discipline, are required for advancing knowledge.

The Communicane is no additive combination of a Communact and an object or referent; the 'plus' sign as used in the combination of 'parts' or 'factors' does not appear in its observation, construction, or interpretation. Nor may the Communicane be taken in any sharp isolation of its own, either from 'behavior' or from 'nature.' We isolate in use or in study first in one way, and then in another. The

Communaect is obtained by a selective observation which is comparatively restricted. The Communicane is likewise obtained by selective observation, in this case immensely wider. If the Communact is word or sentence 'just as we find it in nature,' so also is the Communicane, except that in the latter case we 'find' more, we observe more fully. If we apply such words as 'part' and 'whole' to Communaect and Communicane, we must do it subject to an improved future interpretation of the words 'part' and 'whole' themselves in fully functional rendering. This means that we must be content to learn what such a 'relation' as 'part and whole' may be, in the particular case before us, through the very process of studying the case; we must not allow our study to be limited or confined by some specification of part-ness or whole-ness imported from remote, and perhaps non-pertinent, regions of knowledge.

The Communicane, with all its freight of meanings, must be before us in extensions and durations. Its phase or aspect, the Communact, is itself a directly extensional and durational presentation. As such phase or aspect, the Communact carries these characteristics with it across the entire construction of the Communicane. Should the Communact be taken as a mechanically separable 'part' of a Communicane, and should assertion be made that, while *this* 'part' is extensional and durational, the other 'part' or 'parts' are not, then the postulate of the uniformity of knowledge will have been abandoned. Such attitude and procedure will be found equivalent to employing the two 'opposed' languages of psychological puzzlement in disjunction, placing a part of the full presentation in one of them, the 'physical,' and another part in the other of them, the 'mental,' 'psychical,' or 'non-extensional.'

To say that the Communicane in all its phases and aspects is durational and extensional, is, however, very far indeed from forcing it into mechanistic spaces and times. We found that the Communact could not be 'seen' where the old mind-language governed the observation, nor where the physiologically mentaloid substitutes for the mind-language governed it. We did find, however, that it could be

observed in the space and time frames of the mechanist, though not in the special 'behaviorist' segmentation; we were also careful to remark that, while such frames could be used as approximations, they were far from adequate for the full description. These same mechanistic space and time frames continue to apply to the Communicane, though now with even more marked poverty of description. The more intricate space-time frames established by the physics of relativity must also be expected to apply, and with just such limitations and qualification upon the scope of their application as physics may itself establish. The durational-extensional form now under development by physiology must also apply. The Communicane, however, will not tolerate arbitrary mutilation or degradation to the schematically mechanistic form or to any other. If its own requirements are more complex, if the frames of observation offered to it by other sciences show themselves inadequate, then it has the right to proceed in accordance with its own observational needs. To deny this right would be to put blinders upon observation, not to further it.¹

The Communicane is human behavior. It is not to be called behavior merely because the Communact may be regarded as behavior. Instead, it is a thoroughly behavioral presentation, with respect to its object or reference and to the Communact alike. Behavior is that specifically separate field of scientific inquiry, set over against the physical and vital, within which both 'social' and 'psychological' research must be carried on. It is that great type of activity which cannot be held within a physical description and technique, nor within a vital, but which requires a directly psychological and social form of research, with whatever better descriptions and techniques we may secure to replace the two very imperfect words 'psychological' and 'social.'

No apology is needed for taking the word 'behavior' out of its narrow 'behaviorist' rendering in mechanistic terms, and giving it fuller durational-extensional rendering ade-

1. Behavioral space-time is discussed in chapter XXVII.

quate to carry its full content of 'meanings.' The behaviorists have not agreed among themselves as to their definitions, nor have they been able to make consistent development in terms of such definitions as they profess to adopt.² If the biologist also uses the term, no confusion will result.³

By 'behavior,' then, let us understand the activity, the procedure, the event-fullness of organic life, in all of those of its reaches which are 'psychological' or 'social' in the sense that they cannot now be, and show no indications that they are immediately coming to be, described in strictly physiological terms, or investigated by strictly biological techniques.

Not even the 'physiological' can be firmly clamped and confined today within the skin of an organism; sunlight or other radiation from the sky is direct phase of physiological event. Even less can behavior be observed within a skin-bounded segment of space such as we call '*an* organism.' The moment that the fictive presentations of the old mind-language, including both its organic or mental localization of apprehensional power and its rigid isolationality, are fully eradicated, that very moment the necessary applications of the word 'behavior' will be found to have leaped, even for primary descriptive purposes, to wider

2. In Part I we have seen Watson arrive at his 'implicit' organism-as-a-whole, Washburn buttress her position epiphenomenally, Weiss strain towards a biosocial dominance, and Hunter struggle desperately to establish boundary lines. See chapters VII and IX. Titchener, on the defensive against these constructions, proposed to get rid of them by making the word 'behavior' apply to the characteristically biological situations of organism-environment.

3. We must not take the name 'biology' to describe a single unified type of scientific investigation. While the biologist centers his attention upon the 'vital,' he is also largely interested in the 'behavioral,' and of late, to an increasing extent in the technically 'physical.' The occasional extension of the name 'behavior' by a biologist to cell or gene has no more significance in terms of present knowledge than has the use of the word by a chemist or physicist who speaks of the behavior of electron or atom.

segmentations of space. The arbitrary physiological and the crudely mechanistic renderings of behavior present themselves alike in a verbal fog of 'environments' and 'adaptations.' This fog of reference must be dissipated. This can only be accomplished through direct and specialized observation. Extensions and durations must be widened sufficiently to permit direct observation. Likewise, space-type must be developed to permit such observations, though all that this requires is the stripping off of old servitudes which forbid observation's own advance. If behavior shows any form of 'common-ness' among men, any form of 'community,' these phenomena, then, can be established in such a way that they will be 'seen' and not merely dreamed about or evaded. If it does not show such 'common-ness' or 'community,' this fact likewise can be established in defiance of all dreaming. With this additional specification for its employment, the word 'behavior' can then be used with increasing definiteness as our discussion advances, to carry the full set of meanings and implications for the words 'social' and 'psychological' alike.

The Communact, as we have studied it, is manifestly behavior under this rendering of the word. It is not an arbitrary addition of two 'behaviors' as primarily described in two 'different' men; neither is it a mystical 'fusion' of two observably separate human organisms. It is behavior-event, as observed, and as ready for further inquiry, in maximum freedom for hypothesis and construction.

The Communicane is now also asserted to be behavior. This assertion holds only if the full inclusion of objective reference in the Communicane is itself directly behavioral. It is this issue which must next be explored. The objective reference, whether seen as it enters the Communicane or seen as detached from it, must be behavioral; it must be a presentation within the enterprise of behavioral inquiry, rather than within the conditioning enterprise of physical or vital inquiry. The conditioning must be recognized, and recognized as much in the reference of communication as

in the communicating organisms. But inquiry must not stop there; it must proceed to understanding and interpretation. If the Communact is seen as 'functional' within the Communicane, then the objective reference must be equally 'functional.' Communact and objective reference must be functional with respect to each other.

The construction within which the Communicane is attained as observable is then in sharp contrast to any construction which takes men-things as one group of basic data, and thing-things as a radically dissimilar group of basic data, and attempts thereupon to establish a scheme of scientific organization (with or without an asserted metaphysic) for these two radical dissimilars.⁴

The terminology that has thus far been used or indicated may now be assembled and some necessary additions to it made. Just as the dicaud is functional within the dicaudane, so also the functional status of scriptilect and other forms of the Communact is established. We obtain, then, the set of names in the accompanying table.

COMMUNICATIVE BEHAVIORS

	I <i>Full Behavioral Observation</i>	II <i>Observation Specialized to the Communicating Men</i>
GENERIC	Communicane	Communact
SPECIFIC		
Vocal	Dicaudane	Dicaud
Written	Scriptilectane	Scriptilect
Gestured	Gestane	Gest
Other	Tn-phenomena	T-phenomena

These names have no equivalents in our available vocabularies. While they are introduced primarily as technical

4. See the diagrammatic contrast of these manners of procedure, chapter XXVIII, section 4.

aids to our inquiry, they answer, nevertheless, a lively need which will persist, whether the names in their present forms are retained, or modifications or substitutes adopted. Throughout this terminology the suffix *ane* for the perfected observation stands in balance against the endings *d* and *t* for the partial observation.

That this set of names is incomplete is apparent even at our present stage of inquiry. We have asserted that the 'reference' of communication is to enter the Communicane functionally or phasally like the Communact; this reference therefore should similarly have its distinctive naming or namings with terminations in *d* or *t*. A third column would thus be required for these additional names. We have one word ending in *t* in common use, which suggests itself at once as a candidate for employment here. This word is 'object.' We might readily proceed to use it with such further specification of application as we desire. To do this, however, would be to force the word 'object' to standardize itself throughout the text in the particular form we selected for it. This would bring it into continuous conflict with the behavioral values allotted it by other investigators in their own work. Since the varieties and shadings of meaning for 'object' are endless, this procedure would not facilitate accuracy of communication and understanding.

We have need, moreover, for still other names in addition to those for the 'reference' of communication. We must become able to deal with 'perception' side by side with 'communication,' and on equal terms. We must be able to analyze all the organic and 'individual' phases of communicational and perceptual behavior in organization with all its 'object' and 'percept' phases. We must have names for whatever is capable of scientific observation and inquiry in all those situations to which the words 'person' and 'thing' more commonly apply.

We face here a critical issue, not merely in terminology, but in the whole manner of exposition for the further results of our investigation. We may, if we wish, decide that

our 'background' of observation is now sufficiently clear so that we can henceforth display our phenomena—our 'figures,' our 'objects'—positively and without precautionary qualification. This is the attitude which investigators take when they assert that they are proceeding 'objectively'; they issue their decrees as to 'factuality,' and assume that every one else accepts or ought to accept them as issued. In this case we should complete our table of names with the indicated additions in *d* or *t*—whether using 'object' as a central term, or coining a full set of new names—and proceed to direct exposition.

I am, however, far from satisfied that the linguistic 'background' of inquiry is sufficiently clear for any such procedure. We are now at a point where the two great opposed attitudes towards the materials of investigation, the disjunctive and the functional, will begin to show their sharpest conflicts. We must continue to exercise the greatest caution against looseness in the application of words. I shall therefore shift the form of terminations for the further names we require so that we can best face this conflict with eyes open at every step of the way.

For the phases of observation which should have place in a third column of our tabulation, I shall use a termination in *an* instead of one in *d* or *t*. The suffixes *ane* and *an* will here be balanced against each other. It will then be understood that where *ane* and *an* are employed we are not insisting that we possess definitive observations, but instead, that we are erecting a temporary terminological scaffolding in aid of observation, whereby we may secure better orientation in dealing with the troublesome 'backgrounds' of conventional linguistic implication.

For our own direct development we shall employ the following names:

PERCEPTANE. Any specific instance of the observable behavior of *an*-organism-in-environment.

PERSONAN. The behavioral participation of the 'separate' or 'individual' organism as phasal either to the Com-

municane or to the Perceptane; to be known as *C-personan* in the former case, and as *P-personan* in the latter.

OBJECTAN. The reference,⁵ as behavioral, of either Communicane or Perceptane; to be known as *C-objectan* in the former case, and as *P-objectan* in the latter.

In the above specification for the use of the name 'Perceptane,' it is to be understood (a) that the word 'behavior' prescribes that the phenomena covered by it are *not* today capable of adequate direct presentation by the techniques of either physical or vital sciences; (b) that the italicized word 'an' stresses the direction of our attention upon the organism, separately-inspected-as-single, within its environment of objects; and (c) that this 'environment of objects' is not before our consideration in the guise of fully extrapolated, fixed, extraneous datum, but as itself phenomenally subject to inquiry for our present purposes as well as for all the other purposes of science.

By the use of these names we give Perceptane full standing in direct observation as subject-matter of investigation side by side with Communicane. At the same time we specify Personan and Objectan as phases of specialized inquiry with respect to Communicane and Perceptane, separately or together. On the side of Objectan we permit no entanglement either with the word 'percept' or with the word 'object.' The former is too narrowly limited to a central case of Perceptane, while the latter slides too uncertainly over a large field. On the side of Personan we free ourselves similarly from manifold conventional fixations of meaning which would implicitly enter the discussion, irregular and uncontrolled, if the word 'person' were used.

We have in this terminology a fair opportunity for increasing precision in discussion. Its greater importance is that we now have power, by a simple transposition of suf-

5. I make deliberate use of the comparatively colorless word 'reference' in this preliminary specification. No distinctive word that avoids prejudice seems available. Increased definiteness is to be gained only through the further direct study of P-objectan and C-objectan.

fixes, to bring our own procedure into firm and definite contrast with the disjunctive procedures whereby 'person' and 'thing' are taken as basic presentations for behavioral inquiry. Through such a transposition we at once have available a new set of names.

OBJECTANE, PERSONANE, PERCEPTAN, COMMUNICAN. In these names the stress falls most heavily upon 'object' and 'person.' Objectane and Personane present 'object' and 'person' as the dominant observations of basic phenomena which are to be the primary subject-matters of inquiry. Communican and Perceptan then name the communicational and perceptual processes as dependent presentations of analysis.⁶ By the use of these alternative sets of names the construction of observation is swung, so to speak, through an arc of ninety degrees. The opposed constructions may then be compared, free from much of the confusion that arises under the use of the conventional vocabulary with its promiscuity of meanings. We shall have occasion from time to time to bring Perceptane and Communicane into orientation with Objectane, but shall reach no direct contact with Personane, nor with the full construction in terms of Personan and Objectan, until the joint organization of psychological and sociological techniques of research is examined in chapters XXVIII and XXIX.

What we may accomplish by the use of such names is closely comparable to what the physiologist accomplishes when he stains his 'preparation' for observation in the slide of his microscope—this not by way of analogy, but in close similarity of technique. The physiologist knows that there are puzzles before him, and that his vision is still confused. He knows that his preconceptions are very apt to be wrong. He seeks control by sharpened definition. He experiments

6. It is none of our duty here to establish the status of the terms 'Communican' and 'Perceptan' in legitimately scientific procedure. That duty falls upon investigators who stress Objectane and Personane in basic hypothesis and analysis. The word 'act,' as we have previously examined it, offers a pre-scientific attack upon the problem.

with stainings. He holds a structure before his observation by a stain. He does not proceed to say—at least he is unwise when he occasionally does say—that his stain gives him a key to reality. What he says is that it is an aid to his work. Our state of confusion is worse than that of the physiologist. We find ourselves floundering in muddied waters, turgid with the linguistic debris of age-old speculations and fragments of experience. Here are all the abstracts and the concretes, the particulars and the generals, the individuals and the socials, and all the linguistic embodiments which the philologies assume or attempt. Here are all the logics and all the ‘meanings’ and ‘values’; all the philosophies and epistemologies; and all of the ‘thoughts’ and ‘thinkings,’ whether of ‘minds,’ of mechanistic speech-behaviors, of ‘whole-organisms,’ or of the latest exemplars of ‘muscle-mentality.’ In our case, just as in the case of the physiologist, the need is to specialize the direction of attention. For our aid, in place of a color stain, we must fixate our selective observation verbally. Thus we set up our names, the Communact, the Communicane, the Perceptane, and the others. Thus we secure a ‘preparation’ for our own needs. The value of our ‘preparation’—our ‘namings’—can be established, of course, only by the results secured through observation and ever more observation.

Attention in the remainder of the present chapter will be confined to the Communicane and to the status of C-objectan and Communact as phasal to it; the problems of P-objectan and Perceptane are deferred. This course is adopted in full awareness that most readers will regard any attempt at a formal determination of linguistic behaviors as certain of miscarriage without the prior determination of perceptual behaviors. Independently of other considerations we are to show in what way the C-objectan may be regarded as wholly behavioral within the full observation of the Communicane; we are to give a first rough sketch of the durational-extensional frame of construction in which such observation is practicable.

We shall examine the C-objectan—the reference, object, or ‘meaning’ of communication—in the generic form, and shall not classify its specializations. Two important ranges of inquiry are thus passed over. This leaves the possibility open that fuller analysis in either of these ranges may later compel remodelling of the entire construction. If such is the outcome, all the better; that possibility is no reason for dropping the very task which opens the way to it.

The first of these ranges is that in which are displayed the details of differentiation as between dicaudane, scriptilectane, gestane, and tn-phenomena. Wide differences of resultant construction appear, according as the theorist is influenced by his preoccupation with the special characteristics of the one or the other of these forms of linguistic behavior and gives it especial stress. By far the greater attention has been devoted in the past to the scriptilectane. The involved issues come there most elaborately to view; but also inquiry is there hampered by a peculiar characteristic, namely the semblance of extrapolation of the scriptilectane from human behavior. The ‘book’ on the shelf sits there as if by some power of its own, apart from human behaving. The *logos* has had its mystical value. Word-magics have been innumerable. Creeds are still seen welding men together over long periods of time as if by their own power. Above all, in the scriptilectane the ‘Aristotelian Effect’ claims dignity and authority. Nevertheless, under our present observation and construction all species of the Communicane are alike behavioral, with the problems of the C-objectan alike for all. The crudest behavioral shriek has probable, if not as yet fully established, values as Communicane;⁷ from it, all the way to the scriptilectane as itself behavioral, the unified observation of the problems of C-objectan is practicable.

The other range of inquiry for the C-objectan which we may here pass over is that in which differentiation is made between ‘objects,’ ‘meanings,’ ‘referents,’ ‘plans,’ ‘purposes,’

7. See chapter XXIII, footnote 10.

'ideals,' and various other specifications of behavior oriented to the 'person.' These distinctions are not germane to our present purpose. All such specifications have their aspects of objectivization as over against the communicating men. Where the C-objectan is of such a type, or in such a form, that the mechanistic space and successional time of ordinary everyday language may readily be applied to it, it takes the status of 'thing'; where the mechanistic frame does not so readily apply, the status of the C-objectan shifts to that of 'plan,' 'purpose,' 'ideal,' or other substitute formulation. Our concern here is not with such distinctions, but with the characteristic common to all these phenomena: that they are functional to the Communicane. We assert this common status and permit it to stand unsupported by immediate analysis, although it is in conflict with the more usual methods of distributing the phenomena for research. The ordinary distributions arose prior to the recognition of the place of the Communicane in direct observation in the behavioral field; they can therefore have no force against the position here taken. Whether deeper studies undertaken after that recognition will require its modification can be safely left for the future to show.

We observe a foot race. The starter shouts "Go," or drops his flag, or fires his gun. The runners start. Observe the full behavioral situation. Dicaud, or gest, or both, were present in it. They were present, not as detachable from Communicane, but as aspects of Communicane; and Communicane was present as aspect of the full situation. But precisely in the same way and in the same sense was C-objectan present—the 'race itself,' or the 'goal' of the running. Any phase of this situation may take mechanistic isolation or other technically physical presentation. A dicaud, so isolated, becomes meaningless for behavioral investigation if the isolation is rigidly rather than selectively presented, no matter how essential it is that dicauds or other species of Communact be at work in order that the behavioral event—the race—occur at all.

But any other physical isolation, as, for example, the 'lay of the ground,' is equally meaningless, except as phasal to full behavioral formulation. As thus phasal it has the form of C-objectan; and only as C-objectan, in construction phasal to Communicane, can it enter behavioral inquiry at all. However variously physical and vital studies may be made, what is directly before us in a behavioral inquiry is *all* behavioral.

The shout "Storm" issues from the lips of 'A,' making contact across the air with the ears of 'B.' It is a behavior in a setting of behaviors. Physical and vital phenomena, as phases, can be isolated for inquiry, but our own direct observation is of behaviors, the 'storm' included thus as fully as the 'men.' The situation of reaction may be stripped down to a crude inclusion of 'black cloud' or of 'wind in distant tree tops.' It may have a setting of weather-lore. Its setting may be one of weather-science. The further this last is examined within the frame of the science of physics, the more fully it is seen as a communicatively behavioral presentation. The more remotely the setting runs into primitive types of reaction, the more clearly, likewise, the fully behavioral character of the situation is apparent. Only in certain intermediate, practical ranges does 'storm' make claim to 'exist' (in full extrapolation) as over against 'men' who, separately, 'exist.' But this whole construction of 'existing' is itself one of communicative behaviors. The question here is not one that involves denial of any such 'existence,' either for 'storm' or for 'men'; it is wholly a question of investigation, involving merely the abandonment of constructional dependence upon a crude presentation of 'existence' for either. The 'local point of view,' as it has elsewhere been called,⁸ presents the 'substantial' men and the 'substantial' storm. But this very 'local point of view' is phase of the behavioral phenomenon, which is before our inquiry. 'Outside of,' or 'beyond,' this 'local' point of view, that which

is 'storm' or 'men' within it, is free to take such improved description and interpretative organization as advancing knowledge may provide.

If, in place of the 'Go' of the foot race or the 'Storm' of men imperilled by weather, we take the shout "Dog" by which 'A' warns 'B' of the animal rushing upon him from behind, the case is no different. The 'dog' as C-objectan is one of the most ancient presentations among men. In the primitive cases where it means 'dog to eat,' it is behavioral. Where it means 'dog that bites' it is equally behavioral, even though the fictive distinction between 'activities' and 'passivities' in the behavioral field may blur and confuse the observation. In the most advanced situations of scientific knowledge, the developed construction 'dog' is behavioral beyond all demur, when the full setting of knowledge is taken into account. Just as with 'storm,' ignorance of this prevails, and denial is vehement, only in those intermediate stages of human living where this very 'human living' has modeled a picture of the universe to its immediate requirements by way of Aristotelian linguistic devices, and where it insists strenuously upon the verity of its picture. These intermediate stages may assert themselves as the base of all knowledge, but no matter what the sound and fury, they never perfect their claim with even a minor degree of coherence. Give them long enough extensions and durations, and they must appear and be observable as what they are, themselves specializations of behavior.

The above paragraphs will suffice for illustration. They present the general appearance of the situations in which the C-objectan is open to observation as behaviorally functional to the Communicane. Each C-objectan, whether 'purpose' or 'thing' or any other, involves a characteristic functional development with respect to Communact and Communicane; it presents itself in a frame of extensional-durational behaviors analyzable, not in terms of basic sep-

arations, nor of mechanistic 'parts' and 'wholes,' but of durational organization.

The sharpest questions that arise concern the status of this C-objectan with respect to P-objectan; with respect, namely, to 'thing' or 'object' considered as directly before perceptive, sensational, or other comparable process, and as thus directly referable to the 'individual' animal organism.

Before examining these questions it is necessary to come to plain terms with the postulate of uniformity in science. Investigation of the Communicane and its identifiable phases must proceed hand in hand with the researches of physics and biology; the Communicanes must have place beside the phenomena of these latter sciences as fellow members of a single system of knowledge. The fellowship must be that of an increasing factual definiteness and a developing coherence of understanding—never, of course, one of an assumed 'reality,' or of some perfect 'rightness' or 'truth.' Consider all serious scientific problems and enterprise; disregard only the slovenly 'mental' and 'material' presentations of the tatterdemalion psychologies and sociologies of the market-place.

We are able to differentiate the general postulate of scientific uniformity into two types, which are in contrast with each other according as they do or do not take into account the communicative behavioral phases of the world-presentations they set forth. One of these we may call the postulate of *uniformity of nature*; the other, that of *uniformity of knowledge*. The first presents 'nature' as so thoroughly and uniquely 'known' that it is before us in transcendence of the limiting conditions of its 'being known'; the second retains this limiting condition in its statement.

The postulate of the uniformity of nature takes common expression as follows: The physical world, as extrapolated from the knowledge of it, is the basic presentation of science. Physically located 'within' this world and as

'part' of it are living organisms, themselves of ultimately physical constitution. Physically and vitally located 'within' the range of living organisms—and, more particularly, 'within' certain 'higher' organisms of that range—are neurological-psychological processes, themselves of ultimately physical and vital constitution. Thereby physical nature secures report upon itself through the activities of certain 'parts' of itself; or perhaps, in alternative expression, certain 'parts' of physical nature are exceptional in their ability to 'know' the rest of it. This is substantially the postulate of uniformity as Titchener takes it over from other sciences and endeavors to use it in his *Prolegomena*.⁹

The postulate of the uniformity of knowledge, in contrast, runs in effect thus: Knowledge of the physical must be taken as basic knowledge, and as applicable, so far as its descriptions and techniques extend, to *all* the vital and to *all* the behavioral; and with full freedom for the unlimited extension of its specialized techniques, so far as it can achieve satisfaction through its own success. Knowledge of both physical and vital must be taken as applicable, so far as their descriptions and techniques extend, to *all* the behavioral, and with full freedom for unlimited extension across the behavioral field. All of this knowledge, all of these descriptions and techniques, exhibit involvement in communicative behaviors in the sense that neither as Fact, nor as Knowledge, nor as Experience, nor as Language, can any 'part' of it be basically, radically, fundamentally, absolutely, severed from the other 'parts,' so far as either our present powers or definite outlooks suffice to indicate.

The distinction between the two forms of postulation is thus not one as to 'uniformity.' It is rather one as to the respective applications of the distinctions 'part and whole,' and 'within and without.' The first postulate, that in terms of 'nature,' assumes that its user now and here possesses adequate structural comprehension of such distinctions. The second postulate, that in terms of 'knowledge,' confesses

9. See my discussion of Titchener in chapter XV.

ignorance as to the complete and adequate structural status of these distinctions themselves. The first postulate, when extended beyond the field of its origin and growth, shows itself with dogmatic and authoritarian attitudes. The second postulate, in contrast, is analytic and functional.

The first postulate works well enough for the physical and other 'natural' sciences—or has at least done so for several generations. When applied to the social and psychological fields of inquiry, it involves the position that the C-objectan, or whatever that term 'really' indicates, lies outside of behavior and behavioral knowledge. This position yields even at this stage the absurdity that what is taken as totally 'outside of knowledge' is, at the same time, taken as 'present to' it.

The general pattern of the reasoning that takes place here is well enough known. There has been little change in it since the days of the mentalist. It takes this 'present to' as meaning 'present to the organism.' The 'organism' substitutes for the 'mind.' The argument is of the 'true-for-all' type. Regarding language as an incidental mechanism of adjustment—'words' in communication having somewhat the status of toenails in scratching, in an unenlightened view of scratching—it holds that agreement between many reporters is adequate demonstration of extrapolated 'existence.' If the external 'thing' were not *there* to be agreed upon, so this argument runs, how could the isolational organisms ever possibly get to agreeing? This is little short of the pathetic, disregarding as it does even such a widely known fact as that men grow up from infancy in domestic and neighborhood situations of communicative behavioral adjustment, within which they are behaviorally modelled.

The above is nevertheless, so far as I know, the best interpretation that can be secured under a construction which rests in a basic 'individualization' of knowledge, and in a correlated basic externalization of 'fact-things.' It gets nowhere at all. The argument is behavioral at every step, as to both materials and development, until it reaches

its conclusion. There a precipice appears, and one leaps with sublime confidence into the 'realities.' This further leap is irrelevant, and indeed, almost meaningless; for each era, its characteristics can readily be identified as those of the particular 'practical' or 'local' attitude of the generation to which the disputant belongs.

When we consider the behavioral values that enter into all of the materials of these postulates—that of 'nature' as well as that of 'knowledge'—and the fictive stress of the conclusion that is made in terms of 'nature,' the split between the two postulates is by no means as wide as it may have appeared at first view. So far as the 'natural' sciences are concerned, the split is little more than one of vehemence of assertion; it has trivial significance, or in the end perhaps no significance at all, so far as the broad and enduring techniques of these sciences are concerned. Only when we reach the psychological and sociological fields of investigation does the older postulate show clearly its incompleteness of formulation, and lead to the massacre of knowledge.

These issues of postulation are inextricably woven with the problems of observation for the C-objectan. Whatever the status of the C-objectan may be, it can be given sharp expression only through definite postulation and through thorough comparison of postulations. Under the postulate of the uniformity of knowledge, the C-objectan is entitled to its thorough behavioral study in all of its phases and aspects. Under the postulate of the uniformity of nature, the right to such inquiry is denied in advance of the attempt, and in defiance of the results that might be secured. To give the C-objectan behavioral inquiry is to examine it as phasal to the Communicane. To present C-objectan and Communicane together in this way does not imply that any formulation in terms of Communicanes can dominate knowledge. Every implication of this last type is to be rejected upon precisely the same ground as those upon which a postulate for all knowledge in terms of the partial

formulation 'nature' is to be rejected. In each case a 'part' would purport to dominate a 'whole.' Generalization of this type is exactly that which, on either side, results in the dogmatic presentation of the 'reality' of the 'part.'

It is not 'parts' in rivalries for authority which concern us. That with which we have to do is the establishment of a common denominator of behavior—and this as a field of specialized scientific inquiry—wherein the C-objectan and the P-objectan (to which latter we shall shortly turn) will together provide the framework of organization and construction for whatever any one, as his inclination leads him, may endeavor to specify as 'object' or 'thing' in a more independent sense; as, namely, Objectane.

The situations out of which the postulate of the uniformity of 'nature' has grown are those in which Newtonian or absolute space and time have been taken for granted. To that postulate a basis is necessary in a single, definite, certain space, and a single, definite, certain time, which are 'the same,' both for the 'phenomenon'—the behavioral presentation for the 'human local' point of view—and for the postulatory construction of knowledge. The Newtonian mechanical space and successional time answered the needs of the earlier investigations in both directions; it is in that respect that this space and time was entitled to its frequent characterization as 'absolute.'

The very moment that physical relativity introduced itself as necessary for the researches of physics, that moment the postulate of the uniformity of 'nature' was shattered. Naturally enough, this postulate—that is to say, its proponents—did not recognize the fact and surrender acquiescently. It remains as an instance of the well-known 'lag' everywhere to be found among social phenomena. It will doubtless remain for a long time, useful in all of those reaches of knowledge in which nothing more accurate is needed. Its place as an approximation to postulatory procedure is secure enough.

In the older space and time, and under the accompanying postulate of the uniformity of nature in the special sense of that space and time, the Communicane, as has repeatedly been said, is not observable; the C-objectan is not observable in its full form; and the Communact, while observable in a first approximation, is not adequately observable as functional within the Communicane. 'Meanings' and 'values' and all the comparable aspects of behavior were so alien to that mechanistic space and time that they were thrown out of its field altogether and dealt with in a separate linguistic structure, that of 'mind.' They were nevertheless given orientation, 'quasi-localization,' by assignment in some mysterious way to the most convenient 'part' of matter, namely, the human body, either epiphenomenally, neurally, or, more recently muscularly.

So far as the space-form is concerned, its advance to a more competent treatment in 'nature' at once makes it available for more efficient service in 'knowledge.' The extensional background of scientific research ceases to be a barrier to the investigation of behaviors; if it does not directly further such inquiries, it is at least permissive.

With respect to the time-form, however, positive aid is at once obtained. The old successional time was primarily a dating of stages in the history of 'things.' Useful enough in its application to the older 'nature,' it was handed over to the phenomena set forth by way of the 'mind-language' as if directly and properly applicable to them. So far from being applicable, it was a most serious obstacle to their description and analysis. When the stress in physical postulation is transferred from the older successions to the newer durations, a presentation is secured which makes possible great advances in psychological and social research. In the durational form, in the presentation of phenomena as 'event,' behaviors find themselves at once at home, and free for direct observation and study.

In the durational presentation, 'meanings' and 'values' can be observed in one coherent construction all the way along the route from 'person' to 'external thing.' They

cease to be mysterious powers of the person, or mysterious attributes of the thing, or mysterious interpolations between the separated person and the separated thing; they become aspects, phases, of the full person-object situations. It is in this durational form alone that 'person' and 'thing' can be observed together in function; it is in this form that observation yields the phenomenon of the Communicane, with Communact and C-objectan as aspectual to it.

To describe the full situation of the Communicane as behavior is precisely the same as to say that the phenomena present themselves to us in behavioral space-time. We observe freely; we employ whatever construction of space-time is necessary properly to frame the observation; we qualify this freedom only by recognition that the space-time of behaviors must never be antipathetic to the spaces and times of the physical and biological sciences, but always consonant with them. Not imitation of those other space-times is implied, and not their forced adoption, but instead, the right to evolve along the extended pathways of their own evolution in knowledge.

The Communicane is now before our attention as a representation within the general constructional frame of knowledge, while at the same time it conditions that frame itself. Is this absurd?

Consider the older postulation, that of the uniformity of 'nature.' Here a 'part' of the known world, given preliminary organization in knowledge, was taken as the certain base of all knowledge. The 'things' in Newtonian space and time, as 'locally' presented to men, were assumed to be ripe to govern all that was to be learned, including 'minds' and whatever alternative for 'mind' might appear. That these 'things' were behaviorally established, from their first intimations to their furthest constructions was ignored.

The difference is one of dogmatic assurance, not of circularity in knowledge. The departure is one from vehe-

mence of assertion towards caution in assertion, not from a certain to an uncertain base.

It is within the full range of the activity, the process, the event of the Communicane, that the distribution of scientific fields into physical, vital, and behavioral arises. Under the procedures of the Communicane, assertion ceases for any such distribution that is ultimate or even certain of practical permanency. The threefold distinction we are using may be expected to change with progress in factual description and interpretation. Maximum import may perhaps establish itself in the future for one of these branches of inquiry as compared with the others. But this cannot be established in terms of the 'Aristotelian Effect' in language. The freeing of language from its specific impactions into 'certainties,' and the substitution of those techniques called 'scientific,' is the greatest of all requirements.

XXVI. OBJECTS AND ORGANISMS IN SYSTEM

Psychology and sociology are alike in that their investigations deal with situations in which organisms and environmental objects are involved together in durational events. The systems of such events provide the subject-matters for both of these sciences. Neither psychology nor sociology is ever able to concentrate its exclusive attention upon the organism taken in isolation, nor upon the environmental object so taken.

The techniques of maximum isolations for objects belong to the physical sciences. They are so definitely characteristic of these sciences that even living organisms, when physically investigated, enter as physical objects, stripped of all specialized consideration of their 'vital' processes.

The biological sciences are able to proceed by way of the isolation of organisms in certain portions of their researches, but not in all. Anatomy and histology can isolate in this way, and physiology can formulate problems and make much progress; but even in physiology this very progress points beyond. Genetic and phylogenetic investigations find themselves always compelled to look upon individual organisms as presented in races, and upon races as presented in system with environments.

With the psychologies and sociologies the case is different from the start. Such isolations as they make are always limited and imperfect. These sciences are required—and this requirement is emphatic, so far as any generalized statement of their constructions can be made—*always* to take objects and organisms together in moving systems.

Despite this basic status, it is the prevalent procedure of the behavioral sciences to place the organisms central to attention and observation. Among the psychologies examined in Part I, only one was found which steadily and consistently allotted to object, *qua object*, an active place

in the processes of perception. The sociologies stress the participating individual organism—the *man who*, with his fellows, composes the society; they inspect the ‘social’ as built out of the ‘individual,’ and they then study it as it conditions or affects the ‘individual.’ This is much as if, in biology, ‘race’ was taken as built out of individuals, and studied primarily as conditioning or affecting individuals. In revenge for this bias of observation, and offsetting it, a spectral ‘society’ rears itself at times to demand consideration. This, in turn, is much as if ‘race’ in biology claimed to be something other than ‘all the individuals.’ The result is a chaos of constructions; it is precisely because of this chaos, as has repeatedly been said, that we are led to experiment with a different manner of emphasis in the approach to these complex situations.

Our manner of inspection has been that of selective observation; we have justified our selections, our choices of phenomena to observe, first, by fitting them within the general scientific frame of inquiry, and second, by expressly avoiding all assertion of ‘actuality’ or of ‘primacy’ in fact, and by limiting ourselves to development under hypothesis. We have in this way dealt with situations in which ‘several men’ come into observation together, along with the objects of their interest and activity.

Given this manner of inspection, the method of presentation and development employed has been to start with the simplest forms of observation, stressing, not their importance, but their bare possibility and legitimacy as observations; and to proceed by their aid to more complex observations where significance for research, providing the observations can be made at all, becomes unquestioned. We have observed in an ordinary mechanistic space-frame, and under the short durations of the simplest description, such a phenomenon as that of a ‘man-speaking-to-another-man-hearing.’ We have passed from this to the general case of the Communact. We have, then, under an enriched

1. The comparison of organism-race with psychological-social may only be used with the greatest caution. See chapters XXVIII and XXIX.

extensional-durational construction, examined the Communicane, in which the references and meanings of the communication enter observation along with the Communact in functional presentation within the full durational-extensional communication itself. Finally, under the name of C-objectan, we have segregated for specialized observation the differentiated object or reference as itself behaviorally observable. This is the full toll of observations thus far recorded, though passing mention has been made of other connected observations such as the Perceptane, the P-objectan, and the Personan.

We are now prepared to give more direct attention to certain of these other possibilities of observation, and to bring them into a degree of organization with the Communicane and with its discriminable phases, the Communact and the C-objectan. In particular we shall, as a next step, have the interconnection of the C-objectan with the P-objectan to consider. To do this is to undertake the examination in a most general way of the situations in which systems of organisms and objects confront the attention of the psychologies and sociologies; it is to discuss, in effect, the forms of research which can most effectively be used by those sciences. Manifestly, in what remains of the present book we shall not go far with such an inquiry. Only the outlines of some of the patterns of organization may be considered; the necessary testing must remain for another time. A survey of the accumulations of psychological and sociological data in their existing imperfect presentations would be desirable, to establish how well they can stand transposition to the form of presentation here employed. More important by far would be a close investigation of a specialized field of psychological-social inquiry, now in notorious confusion, to see what order can therein be established.

The ordinary attitude of practical life furnishes the introductory approach to the sociologies and psychologies; it retains, in general, control of their constructions. This attitude inspects 'organism' and 'object,' 'person' and

'thing,' in initial disjunction. It takes men as animal organisms (or 'minds') and observes them in situations in which it describes their activities (or 'capacities') of 'sensing,' 'perceiving,' 'thinking,' 'valuing,' etc. Again, though less sharply, it observes them in situations in which it describes their 'talking' and 'writing,' and, more generally, their 'communicating.' As over against these animal organisms (or 'minds') and their activities (or 'capacities'), it recognizes and accepts as data the 'things' or 'objects' with respect to which they carry on their perceptual, communicational, and other behaviors, and which they 'sense,' 'perceive,' or 'know.'

What has happened here may be compared with a surgical operation—indeed, with a case in which the operation runs ahead of the necessary diagnosis. The 'operative subject' is a situation involving men in environments. The operation slices the men 'themselves' and their environments apart; it cuts off and commonly discards certain connective tissues which it regards as comparatively insignificant—i. e., the direct communicational processes; it has temporary practical success, although it leaves behind a mutilated patient. The 'men' come out 'concreted' at one terminus of the operative situation, and the environmental 'objects' at the other. These 'concretions' are made basic for all further procedure; the 'connectivities,' even if not entirely discarded, are given minor consideration in further treatment. Well seasoned to this surgery, its practitioners often defend it with violent outbursts in terms of a 'realism' of 'man' and 'nature.' It is primitive practice at the best. Advancing knowledge requires more thorough diagnosis.

We accept such attitudes as prevalent, and face them as we find them. We do not, however, face them in terms of the 'realities' to which they pretend; we recognize no obligation either firmly to sustain them, or else wholly to overthrow them; our work does not run to such pretentious heights. We face them as one form of construction, one form of hypothesis, among others. As hypothesis they stress observation in terms of Personane and Objectane, in

contrast with the observation² and hypothesis which we shall stress in terms of Perceptane and Communicane.³

Reflect for a moment on the enormous variety of constructions—theories, speculations, philosophies—which men have developed for bringing Personane and Objectane back into organization, once they have been operatively separated. Fortunately we have nothing to do here with any debate as to their relative merits. If we had, we should manifestly need a much more highly elaborated set of names. Consider, for example, the case of Objectane. (1) We have introduced it to name a selective observation, in which stress is placed on the isolation of 'object' or 'thing' as contrasted with the different form of selective observation we ourselves make in terms of Objectan as phasal to Perceptane and Communicane. (2) As such observation it serves to name an hypothesis for inquiry into the problems of knowledge. (3) It may, further, stand for dependable outcome of much further inquiry in terms of Objectans—as a goal towards which knowledge may advance. (4) Again, it may be read as realistic immediate affirmation of a certain and secure basis for all knowledge, and, read in this way, it would at once require a vast number of subordinated names to correspond to the variety of speculations in this field. This variety of speculations we disregard. In the case of Objectane, we shall use the word at times for realistic and at times for the hypothetical opposition to procedure in terms of Communicane, Perceptane, and Objectan. No confusion in the text will result, since our discussion, so far as Objectane is concerned, will be limited to bringing out the nature of the opposition with respect to these alternative possibilities of appraisal.

The following point must be especially noted. *The outcome of this procedure cannot possibly be a reduction of*

2. Reference may be made to the discussion in the preceding chapter of the reasons for employing this terminological contrast with its dependent terms—Perceptan and Communican on the one side, and Personan and Objectan on the other. All of these terms are to be taken as technically convenient verbal surrogates for hypothetical construction.

'person' and 'thing' to mere ghosts in the field of knowledge. On the contrary the outcome must be heightened knowledge of their factuality. It is in the conventional constructions of today that the insubstantial, the ghostly, effects are to be found. Raw crudities of stress upon 'person' and 'thing' have exactly the effect, in expanding behavioral inquiry, of making the perceptual and communicational processes 'abstract,' 'ghostly,' within the world of scientific fact—'acts,' rather than 'action.' It is just this break in knowledge that needs to be overcome.

The way to deal with these issues is to look directly at all their phases, to formulate directly, and to study directly. Hypothesis alone makes this possible—hypothesis as substitute for precursory assertion of assured contact with the 'real.' We may readily admit the *possibility* that the division between 'persons' and non-personal 'things' will some day prove to be the greatest dividing-line in nature and in knowledge; if it gives pleasure to anyone, we may even admit the *possibility* that specific individual mentalities and natural non-mental things are the fundamental data of all science. Such assertions will just have to prove themselves, instead of being calmly taken for granted at the start.

If Personan is any specifically identified participation of the organism in behavioral phenomena, and if Personane is the concentrated observation of the whole group of behavioral participations of the organism across its life-period, or across some shorter duration of its living, then manifestly the inquiry, either in terms of Personan or of Personane as a specialized field of research, lies in just that region in which psychology undertakes the greater part of its work. To this phase of the subject we shall return in a later chapter, where the organization of the various forms of behavioral investigation is examined.

What is now to engage us is the problem of the connections of C-objectan and P-objectan with respect to the

presentation of the Objectane. In preparation for this we must make a short examination of the Perceptane.

The specification for the name Perceptane given in the preceding chapter where the full assemblage of terminology was brought together, was "any specific instance of the observable behavior of *an-organism-in-environment*"; stress was placed upon the technical correlation of the behavioral with the physical and the vital, and upon the observation of the organism in a field of objects, comprehensively taken as a situation of inquiry.

This specification does not limit Perceptane to the process known in psychology as perception, despite the derivation of the name. Perception is a process prominent among the behaviors which take primary study in terms of the organism; the name Perceptane must, however, be taken as covering the full group. At the end of its range there perhaps lies 'pain,' so far as pain is rated as sensational. Here we may regard ourselves as having a marginal phenomenon in that sense of 'marginal' in which marginal phenomena are found in genus-species classifications and, in general, in scientific differentiations. Borderlands appear between vegetable and animal life where exact determination is neither practical today nor of vital importance to immediate research, whatever spectacular interest a precise determination might seem to have. So also borderlands appear between the vital and the behavioral. Pain may be classified as a vital phenomenon, as is the growing tendency today; it may be regarded as behavioral; or it may, under further analysis, show aspects of both. One may await the outcome without hurt to present work.

The Perceptane, as thus presented, must not be taken as specifying the 'psychological,' in contrast with a 'sociological' assigned to the Communicane. We shall find the analysis of psychological and sociological, both in factual description and in technical inquiry, to run far deeper

than the contrast of Perceptane and Communicane. It is true enough that Perceptane does, in a generally descriptive way, indicate a great part of the field of the psychologies; similarly, in general description, Communicane presents us much of the field of the sociologies. Psychological analysis, has, however, very much to do with this latter as well as with the former.

So far as immediate purposes go, the discussion may be confined to the central case of the Perceptane, that of psychological perception. The situation among the psychologies is here notorious; it is an open scandal where it is not forcibly put out of sight. The word 'perception' has three forms of stress: upon the perceiving activity as assignable to mind, person, brain, or physiological substitute for brain; upon the full process of perception inclusive of the perceived; and upon the separated 'what' of perception—though here the word 'percept' differentiates itself in part. It would be a rash psychologist who would assert in principle that perception is wholly and exclusively an activity of the person, or a secretion of the brain or nervous system. Nevertheless, psychological inquiries are made, in the main, *as if* perception had definite neural locus. When the physiological psychologist proceeds with radical crudity along this line, he forfeits inquiry into behavior altogether; he secures no coherent system, and does not even attain to definite psychological description. Those other psychologists who construct in terms of movement-segment, act, activity, or P-function reach similar inconsistencies through making perception a 'part' of a situation, rather than an event or phase of an event.

The Perceptane, as here set forth for observation, presents directly an event and specifies it without breaking it into 'parts.' Such 'parts,' taken each for itself, are regarded as mutilations; in contrast the Perceptane is examined as involving the full functional behavioral values of the situation under observation, so far as our progress in observation has been able to establish them. The situation of organism-environment, physical and vital, is pres-

ent; the behavioral activity of perception is present; but the decision as to what is to be regarded as behavioral process in these situations of organism-environment is left to the study of the observable phenomena themselves, and is not settled in advance upon the basis of some model taken from different reaches of scientific inquiry.

The Perceptane, like all our other phenomena, is always before us in the specific instance; it is extensional-durational event. As thus observed, it is substantially that 'unit' or 'segment' of human behavior which Kantor has established as an "interaction of stimulus *and* response," wherein the full interactional process is requisite in order to have the 'psychological' before us at all, and wherein there is no dependence upon any 'part-process' segregated at either end as basic for inquiry into a mechanically compounded 'whole.' However, the Kantor unit, in order to be named Perceptane, must be transported from Kantor's own construction of space and time to a behavioral space-time such as has been necessary for the observation of the Communicane. It must further be studied, not in the professionally psychological detachment with which Kantor himself examines it, but in its interconnections with communicative behaviors; these latter enter independently into observation in their own right, not as auxiliary to the observation of perceptual behavior.

The Perceptane, in its central regions, permits functional analysis into personal and percept phases—P-personan and P-objectan—just as the Communicane permits analysis into C-personan (by way of the Communact) and into C-objectan. Such analysis is the analysis of ordinary scientific observational inquiry, qualified only by the relinquishment of the common presumption that it is safe to overlook the selective nature of the observational activity, and to pronounce forthwith and positively that the results of observation are independent 'fact.' Whether, and to what extent, similar analyses and observations can be made

in the 'lower' ranges of the Perceptane, is something for the future to show, leading as it does directly into regions of marginal study as between vital and behavioral phenomena. In what are often regarded as the 'higher' ranges of psychological study, those of thought and idealization, analysis of this type is deeply involved with the Communicane and with the 'object,' and cannot be carried on successfully in the isolations of the Perceptane.⁵

Given the P-objectan, or, in special illustration, the 'percept' and the C-objectan, or, generally speaking, the 'object,' we have next to consider their inter-relations and organization. We have to observe and examine them in the combinations in which they present themselves as Objectane. We have to do this in contrast with the conventional construction in which this Objectane is taken as realistically existent actuality or fact, and as 'causal,' in some sense, to Perceptane directly, and to Communicane indirectly. We have to accomplish this in terms of a radically different construction—a construction, namely, in which the very presentation of Objectane becomes, not a 'result' in place of a 'cause,' but rather, in primary observation, a phase or aspect, or a function of wide event and complex of events forming the full situation, Personan-Perceptane-Communicane-Objectan.

The first striking observation that we make as we approach this task is that neither of the opposed constructions—the conventionally 'causal' or our own 'functional'—can come before us except through the technical machinery of the Communicane as we find this existing 'naturally' in all societies and among all men. The very proposition that the Objectane is a fact, or 'exists' in any sense, is before us in the communicative form and as a communication. Every reduction of this proposition to presumptively simpler forms

5. Development for the phenomena of 'thought' will be found in chapter XXIX, section 6.

is also before us in the same way, namely, as a Communicane. The very presentation Objectane itself (including all the vague current renditions of it), and every specification of it to which advance can be made, is before us in the form of the Communicane, and through its technique—never otherwise. If I say “I feel, touch, handle,” it is Communicane. If I specify the ‘feeling,’ ‘touching,’ ‘handling’ as prior to, or outside of, the Communicane, I do it by way of other instances of the Communicane. If I specify the ‘thing’ felt, touched, or handled, I do it in the same way.

This is the situation, spectacular enough. It is sufficient to arouse sharp suspicion of the many conventional methods of treatment. However, the mere recognition of the situation does not satisfy us here. We have employed it in Part II as an aid in securing freedom for postulatory investigation, and as the background for the construction of postulation adequate to our needs. Here we must make further progress in the special case. We must proceed to such direct observation as the postulation makes possible to us in deliberately selective exploration.

We may ask ourselves the following questions, vague enough in formulation, but still full of suggestion as we explore the surrounding situations among our fellow men for materials applicable to their answering.

With respect to the systematic construction of the situation: Can either the Perceptane or the Communicane establish itself securely in observation in such manner that it must inevitably be taken as *factually basic* to the other? Is either entitled to assured constructive priority?

With respect to the frequency of P-objectans and C-objectans: May we expect to find *more* of the former than of the latter, or the contrary?

With respect to phylogenetic primacy: Does the Perceptane and its P-objectan emerge in assured *priority in time* to the Communicane and its C-objectan?

It is probable that anyone who ventured a direct answer to these three questions in favor of the Communicane instead

of the Perceptane would be regarded—in euphemistic expression—as the victim of an aberration. Yet there is available strong evidence that such an answer is as legitimate as one in favor of the Perceptane. I shall not use this evidence to urge an answer on the side of the Communicane; personally I regard every attempt at positive decision for such an issue as today impracticable, and further, as unnecessary for progress in research. I wish, however, to show that the evidence is strong enough to indicate that a naïve acceptance of the Perceptane as prior in time and as factually basic in construction to the Communicane is thoroughly unsafe, as knowledge now stands.⁶

Begin with a look at phenomena close at hand. Take the case of the ‘crowd’ or ‘mob’ which, a generation ago, was ‘discovered’ under an interesting use of selective observation, and made the subject of much active inquiry and discussion for many years. Suppose that one begins his observation with the proposition, theory, or hypothesis that each ‘member’ of the mob is primarily a perceiving being, and only secondarily a communicating being—that his ‘substructure’ is perceptual, and that, with respect to his perceptions, all his communicational activity is ‘superstructure.’ To interpret—by which is to be understood ‘to improve the description of’—the mob, one then assumes a ‘perception’ by one of its members and the ‘communication’ of this perception to other members, this communication resulting in the entry of similar perceptions among the other members, and the consequent building up of the ‘crowd’ behavior.⁷ However easy it is to make a theoretical start in this way, when one tries to identify the required phenomena step by step in direct observation he has little success. His perceptual elements and his communicational elements cannot be brought into

6. Weiss, in developing his construction of the ‘biosocial,’ has gone far in this direction; he holds that “even the simplest biophysical reaction . . . is complicated with social stimuli.” See the discussion of his position in chapter IX.

7. The long discussions arising from Tarde’s work on imitation may be recalled.

proper organization. Instead, hé finds himself compelled to make his descriptions in terms of mass effects, slogans, prejudices, and 'group stimuli' of various kinds, none of which are germane to the required hypothesis of individualized behavior established on an exclusively perceptual basis. Recourse to such items as 'feelings,' 'emotions,' or 'instincts' helps not at all.

When one sets up a contrast between individually-reasoned and mass-unreasoned behaviors, it is common to regard crowd-reactions as low in scale. Perhaps one rates the people who become members of crowds as 'low' in comparison with other people; or perhaps one rates the moments of crowd-conduct as 'low' in comparison with other moments or phases of the conduct of the same people. To use either form of rating is to give the crowd-effect a 'primitive' status, instead of a 'civilized' or advanced evolutionary status. Observe, however, what this implies when one transposes the statement to terms of Perceptane and Communicane; in effect, it assigns to the latter a certain 'priority' in phenomenal appearance, whatever such assignment may mean or be worth for purposes of inquiry. Much animal behavior, such as that of the 'herd,' can be brought into comparison and used to reinforce the implication.

Consider three possibilities for investigating such a situation. (1) The individuals may be taken as primarily perceivers, and their communications may be taken as incidental interconnections which develop under highly specialized conditions of complex living; whether this is 'gospel truth' or not, it has never been employed successfully in the full postulation of research. (2) The 'social' may be given some form of personification as over against the 'individual'; this, so far as all experience goes, leads only to impotent absurdity. (3) Discarding the authoritarian pretenses for both of the above forms of construction we may place perceptual and communicational phenomena alike before us as 'behaviors,' allotting them equal status for the purposes of all primary examination. In both cases we will thus treat the behaviors as assignable to 'individual' organisms; in

neither case will we regard them as assignable mechanistically and entirely to such an organism; and in neither case will we assert the detached presence of the one, without any accompanying influence from the other, unless we can securely establish the detachment as fact. Then, under the single presentation of 'behavior,' we have for examination the two forms which we have called the Communicane and the Perceptane; we are freed from certain conventions that hamper approach, and we are enabled to improve our comparisons and analyses.

Continuing to look around us, we readily find great quantities of behaviors which fall under observation as Communicanes rather than as Perceptanes. Most of the phenomena that are examined under the name 'suggestion' will appear here. If a man at the street corner looks up at the sky, and a group gathers around him following his lead, the Communicane is prominent whether or not the man actually 'sees' anything of significance, or whether he 'sees' anything at all. Very much of what is studied under the name 'leadership' appears here; that is, all observation made in terms of the 'led.' So likewise with the tastes which children acquire under the influence of home conventions; the easy test is that the reactions so often run to what the children are 'told,' or to what they 'think' or 'believe,' is fish, cheese, or spinach, rather than to the food itself, which they readily eat when they do not 'know' about it. Religious and political fixations belong largely in this group.

We may try out the question as to respective quantities and importance of C-objectans and P-objectans in a society by taking a look from the vantage point of our own 'civilization' upon a remote population—choosing, perhaps, an early animistic culture. Many of our fellow-citizens are still antiquely animistic; we must look, therefore, not with their eyes, but with the eyes of the rest of us. Our report will be that no one in that early culture ever 'perceived' a spirit in a tree or stone—in other words, that Perceptanes cannot be observed at all in a situation in which Communicanes are not only observable, but very prominent indeed, as, for example,

in the large part of the daily behavior of the early tribe which was carried on in terms of the animistic Communicanes.

Change the picture, and assume that some race a few thousand years hence looks back upon our own era to observe and analyze, and perhaps to sit in judgment. One of its expert investigators might examine a simple case in our daily business operations, such as the sale of safety razor blades. He would discover thrilling slogans carrying conviction that this or that blade, as advertised, was ideally and permanently sharp. He would find it selling on that basis, and selling indeed in such quantities that immense profits and enormous capitalizations resulted. Having identified the Communicanes, he would make search for the corresponding Perceptanes into which reduction could be made for completer description and interpretation. Here he would find many 'perceptions' of Communicanes themselves, which he would read more accurately as 'participations' in the Communicanes; but he would get few perceptual reports on the sharpness of the blade, and none at all on its permanency. He would possibly even establish the fact that the blade had been made deliberately poor, so that more purchases would be necessary. Evidently he would have a case of elaborate behaviors which, as an affair of primary observation, he would find it useful to develop and interpret in terms of Communicanes, with the issues of the organization of these Communicanes in connection with Perceptanes far from certain and clear upon the surface.

Let our observer in the far-off future take a somewhat longer view of Western history, say a matter of a thousand years or so. He would find fairies and brownies, spirits, spooks, and ghosts; Santa Claus; all 'pagan' Gods (making a comment on the side that every God has been pagan to the people of the era, excepting only the representative God of each man's own nation or sect); all universals; all the substantive presentations of the wondrously elaborate mind-language; all 'matter' as existent over against 'mind'; all the absolute presentations of Newtonian mechanics, ranging from its great absolutes, space and time themselves,

down to the smallest and most immediate instances of measurement taken as invariable certainty. These are some of the behaviors he would classify primarily in terms of Communicane rather than of Perceptane. They are not all by any means; they are only those specimens which, under our present knowledge, we may be reasonably certain he would so classify. In addition, he would find most of what we today 'believe' in, but which we today cannot adequately specify; and most of what the generations after us 'believe' in; and he would, we may expect, be thoroughly accustomed to taking all his own 'certainties' with the same basically communicational qualification.

Suppose that we take all the 'religious' behavior of all kinds and ranges that we can assemble out of an inspection of the history of men in the world. Granting that there is nothing at all present that has not the form of activities of human organisms; that each such organism, as an organism, can be severed from other organisms in a mechanistic space and a successional time; and that, when you have added together the behaviors of all of these organisms, there is nothing more to add in the mechanistic-successional frame of observation; shall we then make report on all this religious behavior as primarily of the form Perceptane, allowing only some incidental mediative communication? Or shall we report on it as directly observable in the behavioral form of the Communicane, with the direct perceptual behavior, so far as our immediate observation goes, subordinate in the description? The second form of answer is alone possible, if wide consensus of agreement on accumulations of specific observations is to be the test.

Of the three questions we have suggested as aids in the comparison of P-objectans and C-objectans, the answers to the first two will be that we can everywhere find around us behaviors of the form Communicane, to which we cannot observationally assign Perceptanes in specific priority;⁸ and

8. Phenomena of sleep and of hypnotism often furnish interesting collateral indication. The hypnotized subject will act and recollect in

that we find these in such quantities that a question in regard to 'more or less' may have some real significance, if we can only get our determinations on both sides sharply enough defined to permit significant counting. The third question had to do with the phylogenetic inspection. As to this, further comment must be made.

Our progress thus far was possible only under demand for direct observation and statement of observation, and through insistence that interpretation proceed by way of direct expansion of observational forms of construction, rather than by the 'causal' use of such long-range dubieties as 'minds' and 'real things.' The same procedure must be continued if we desire to turn backwards through the course of animal life to see what guidance can there be secured. If, in this range of examination, it becomes clear that animal perceptions or other simpler forms of animal psychological activity antedate communications among animals, then we shall lose all that we have claimed thus far to learn; we shall have destroyed the right to treat Perceptanes and Communicanes in a provisionally postulated behavioral equality. But such is not clearly the present status of our knowledge in these regions.

In such a test, it is not legitimate to take a highly developed form of communication, such as a modern 'language,' and compare it with an extremely simple form of perception. Nevertheless the conventional attitude commits exactly that error. In the conventional setting of the problem, it is easy to show that specialized verbal communication is a much more complex and a much later phenomenon, in geological-biological time, than is the simple percep-

terms of the communication, where he does neither in terms of his perceptions. In the transition from a light doze into a deeper doze—one which an observer would probably regard as sleep—it is frequently possible to note the definite disappearance of a 'perception,' while its accompanying communicational behavior—its nimbus of linguistic or hazily linguistic formulation—lingers on. In these cases the 'perceptual' is far from exhibiting an assured primacy as over against the 'nimbus.'

tional reaction which can be identified at least as far back as fish and reptile life. Such a mutilated form of comparison, however, lacks any significance at all. The communicational situations must be examined across as long periods of evolution as the perceptual situations, if any proper comparison is to be made.

The common view, so far as these issues are concerned, is that, in the course of evolution, primitive animals and plants acquired a little sensitiveness; that ambulating animals expanded this into perceptions of the environment, or of bits of it, or into approximations to such perceptions; that, after much further evolution, men came to identify the 'things' to which the perceptions 'belonged'; and that finally men gave 'names' to those 'things' to aid themselves in their more complex common activities, and became 'able to talk' about 'them.' Such a view is of the very essence of the 'psychological' as localized activity or 'act' within a neural organism, specified as 'individual.' Here the 'things,' taken as attested to by perception, are regarded as data; that is to say, as 'fact,' the 'fact' being taken as primarily established in direct individual experience, and thus as having the status of 'existence,' and as furnishing the 'real' substructure, with respect to which all scientific and other linguistic enterprise is imperfect superstructure; the fiction, truth, or hypothesis—whatever it may be—that we have named Objectane is here read exclusively by way of the Perceptane, with the Communicane relegated to a subordinate status.

If we consider plant life, a good case may be made for the priority of sensitivity, since we do not today need a communicative factor in studying plant communities; we may indeed, so far as concerns any inquiries we have here to make, call it an adequate case. A physical interpretation, *via* sensitivity, will suffice for ecological studies. But if communicative behavior is not attributed to the plant, neither is developed perceptual behavior. When we take the simplest free-swimming animal form that reacts to a light ray by movement towards or away from the source

of the ray, we have the following set of observations: 'all' the individuals will react very much alike; slight 'individual' differences may be traced, and, if not now traceable, must be assumed; the 'likeness' is referable to genetic unity, perhaps in the sense of non-mortal genes; the differences are referable to mutations or to somatic effects from the environment. So long as the interpretation of the reaction can be held strictly in physical or vital forms, it gets along not merely without the Communicane, but also without the Perceptane. The pre-behavioral representative of communication is the genetic one-ness; the pre-behavioral representative of the perceptual is the direct physical-physiological stimulus-reaction chain.

If, from such starting point, we advance to the behaviors of higher animal forms, we shall find racial and individual elements in the developing behaviors all the way along. The pack of wolves, the ant, the bee, or the beaver may be considered, or the migrations of birds, or equally well whatever animal, perhaps the eagle, is distinguished as the greatest solitary. Here the question whether some one particular perceptual level precedes or follows some one particular communicational level ceases to be dominant in general determination of structure. The two types of behavior, perceptual and communicational, are found always in company with each other, and the higher forms of either involve the higher forms of the other. In such a background, to ask which is prior and basic, the Perceptane or the Communicane, is too much like asking which comes first, the race or the individual? The answer is that, so far as any present powers of observation and construction go, the question itself is absurd. We are free to study any given case from either point of view, and alternately from both.

Let me repeat, and most emphatically, that the aim in the immediately preceding pages has not been to 'prove' that the C-objectan has priority to the P-objectan; no assertion of that kind has been made. Nor has it been to assert

thorough correlation or equality. The equality that has been sought is solely that of the hypotheses of research. To secure this, it is necessary to destroy the dogmatic assumption that the P-objectan is assuredly basic. This is not one of those cases in which one throws a tyrant off his throne in order to substitute another. It is a case in which, in place of a tyranny, a somewhat broader structure of government is needed. We break down the assurances of the P-objectan, not to substitute the C-objectan, but to get better opportunity to inquire into the organizations and inter-relations of the two: in other words, not to secure present dictum, but to prepare the way for protracted inquiries.

Equality in research is obtained by examining both P-objectan and C-objectan as behaviors. We have already described the technique we are using as yielding a common denominator of inquiry. This common denominator is behavior; it is behavior not in any bluntly assertive sense, but as hypothesis of research. It is behavior as observable in its own spatial and temporal forms—as framed in behavioral space-time.

Such an effort at coherent presentation of materials is typical of all scientific enterprise. The phenomena before science, with which it can deal successfully, must have 'system' or 'structure' or 'function'—whichever term one prefers to use—that is 'common' to them; they must 'belong together' in some definite way which permits science to deal technically with them. However crude the first observation of them is as 'together,' advance must be made to their full organization. Where full technical observation defaults, postulation supplements it legitimately, provided always that postulation itself is constructed and controlled by observation. We may indeed describe the differentiation between physical, vital, and behavioral sciences as arising at exactly those regions of incompleteness in observation where postulation must be most broadly substituted for direct construction.

The mentalist's 'mind' was his device for binding phenomena together in that region of problems where our

analysis has revealed the two forms of Objectans and Personans; it was a device of ancient practical origin, which when transported into professional psychological development was required to operate on two or more levels, including the sensational and the cognitional or conceptual. When the physiologist or mentaloid psychologist substitutes brain or other organic activity for 'mind,' he continues to allot to his substitute all the old duties of 'mind' as a binder. If he were able to proceed to direct construction of behavioral descriptions in physiological terms, he would make a good case for himself and justify his own 'device.' He does not do this, however; instead he makes a special bit of matter perform all the unique functions or activities his predecessor had allotted to 'mind.' He has a suggestion for better 'system,' but no direct development of it. He has all the apprehensional and all the communicational problems involving Personans and Objectans still to analyze.

The argument for the construction we have been using is primarily the practical one, that by such an approach we may hope to get results that attain a scientific coherence that has defaulted in the older approaches. The common-sense assertion that "I see a thing" is not left out of the reckoning. Quite to the contrary, what we do is to center inquiry directly upon this type of assertion for its full and direct observation and appraisal. What is left out is solely that highly specialized linguistic construction conventional to our times—that particular form of Communicane—that this "I see a thing," whether attributed to a 'mind' or to a particular bit of 'matter,' provides a firm and certain basis for all knowledge. The "I see a thing" now presents itself as a 'local' point of view, a behavior of men in the universe, with the very presentation of 'universe' itself behaviorally developed, but nevertheless with behaviors capable of specification as processes, aspects, or phases of that universe.

Such a construction is 'circular,' but no more circular than any other the world possesses which goes beyond the bare categorical content of assertion, and which takes into account the manner of asserting as well.

When the assertion is made that C-objectan and P-objectan can and must be treated in full behavioral form, rather than in the forms of dogmatically primary extrapolated Objectane, this is not to assert dogmatically that percept, *qua* percept, or that object, *qua* object, does not 'exist.' Assertions in such forms lie wholly beyond our range. Our assertion is, instead, that *if* one desires to use percept at all, behaviorally, psychologically, as P-objectan, then it is not permissible to treat it part of the time as behavioral and the rest of the time as extra-behavioral. And similarly for object. It may be treated, behaviorally, as C-objectan. It may be treated, extra-behaviorally, as extrapolated in the manner and technique that physics has long made its own. Wholly legitimate is the attempt to make a construction that will organize these two methods of treatment in one of the various possible developments for Objectane. But it is, first, last, and all the time, illegitimate to switch from one manner of treatment to the other at random, to conceal the fact of such switching as long as possible, and when challenged, to fall back upon a sneering remark about 'metaphysics' in lieu of a reply.'

The word 'percept,' as has been remarked earlier, fits well enough into place for the central case of the P-objectan. Definite terminology should organize along with it the behavioral 'reference' of 'sensation' (with due consideration of the cases marginal to the behavioral and vital fields and techniques), and the behavioral 'reference' of the so-called 'higher' processes of thinking, idealizing, purposing, etc.

In such reorganization, however, much that in the past has been treated as an expansion of the procedures of Perceptane, whether in mental or mentaloid forms, will show

9. Percept and object may, at will, be given enough specification for psychological experimentation. It is of course always to be understood that any practical procedure is permissible; and that the only limitation is that its method of selection be recognized and acknowledged in whatever report is made upon results.

itself as requiring primary attention in the procedure of the Communicane. Here the word 'object' is as soundly a candidate for consideration for permanent constructional uses, as is the word 'percept' in the other form of approach. This word we have used freely as a rough preliminary aid to description, and mention has also been made of its technical possibilities. A word or two further about it is desirable.

As we find it in use under dictionary attestation, the word 'object' stands (a) for presentations to 'sense' in the form of 'material things,' (b) for the objectives of action, thought, or feeling, and (c) for the end of effort, such as purpose or aim. It has also an epistemological refinement in which 'object' is set over against 'subject' in 'cognition.' It has, however, no decent organization with respect to the word 'subject'; consider the variety of ways in which men, in practical talk, make the word 'subject' take the meanings of 'object,' and the extreme form in which 'subject' becomes not only 'object,' but *the* object, the sole object.

For the meanings (b) and (c) above, and even for the meaning (a), we have plenty of evidence that 'object' covers the ground we have designated as that of C-objectan. In the epistemological case, where 'subject' is 'mind,' there will be superficial objection to identifying 'object' in a most general way with the phenomenon, the C-objectan. Upon closer examination, however, it will appear that even in this case one common 'situation' is being studied from two conflicting points of approach. What is rendered in one form of approach, under a specialization of 'cognition' or 'thinking,' is rendered in the other approach in terms of the observable Communicane. That which is 'subject' to the precise mentalist will require investigation under this different approach in various investigations in terms of Personan and Communact and Personane, until increased definiteness of understanding is secured.

If the words 'object' and 'percept' have definite possibilities of constructional development, there is a companion word, namely, 'concept,' which must be appraised as without any possibilities at all—as indeed utterly hopeless for

intelligible use. 'Concept' is a convenient word for use where one has no definite attitude as to what he is talking about, and it is a necessary word where the old mind-language is relied upon. Nine-tenths of the scientists of the old established sciences who today attempt to analyze their own procedures find no substitute for it. Yet they would be better off if they dropped it entirely, and replaced it with 'word.' Using 'word,' they would be referring to the observable; using 'concept,' they depend upon the antiquated and unobservable. 'Concept' sets forth what 'mind' is supposed to 'do' with 'words,' where 'words' are employed by it as incidental or accidental tools. Observably, however, 'concept' is a name for a kind of 'word,' and not a very well defined 'kind.' Take 'word' in a barren mechanistic sense, stripped of all behavioral function, and its supplement by 'concept' is required. Take 'word' as communicative behavior, and observe it in its full setting in behaviors, and nothing further is needed to describe its activity and function and meaning.

If we inspect the full behavioral situations of Perceptane and Communicane, we find the extrapolations of Objectane the primary goal of physical inquiry. Many efforts have been made to construct biology in this extrapolated form, and thence to extend the construction to social inquiry. They are, in effect, extensions of the older physical space and physical time as frameworks of wider fields of research. But physics has modified that framework, and physiology is at work remodelling it still further, while direct research into the social leads to still further extensions and reconstructions. Extrapolations of Personane have led to the present confusions of the psychologies. Under this presentation, when specialized attention has been given to the situations we examine as Perceptane, only metaphysics has resulted; and, correspondingly, when specialized attention has been given to the situations we have examined as Communicane, the result has been the weak 'abstraction' of the philologies, the presentation of

'histories' in calendar time, and, in another form of attack, the intricacies of the 'logics.'

To obtain a fair understanding of the organization of organisms and objects, of the system of knowledge in which they can be observed and studied, is therefore a problem that is almost the exact equivalent of the problem of the differentiation of the sciences. The two problems must be worked out together. This is the justification for the recurrent discussion that has been found necessary in this book, with respect to a field which has proved sterile so often as to be today repellent to many at its mere mention.

3. PROBLEMS OF TECHNIQUE

XXVII. BEHAVIORAL SPACE-TIME

No query is more barren than that which takes the form: "*What* are space and time?" No inquiry is more fertile than that which widens the spatial and temporal construction of fact in knowledge.

The bald query as to the nature of space and time is evil because it demands a determination of the full possibilities of experience in forms of expression traditionally pertinent to the minor, every-day experiences of our particular generation and culture—because the 'local' point of view thus attempts to set itself up as criterion for all points of view.

Our widening factual knowledge of space and time has, in contrast, its high value because it itself is expanding experience reporting on the probabilities of still further expansion. Space and time here present themselves as objectivized forms of experience, communicatively developed in the manner of all other objectivizations.

In this chapter I shall assemble and summarize the information that has gradually accumulated in preceding chapters concerning behavioral space-time. In so doing I shall include not a single remark serving as easy catchword or phrase. Space-time is method. It is technique. It is observable in event. It can be selected for specialized observation in the way any phase of any event may be selected. But, so selected, it must be held to its phasal or functional status in observation. Neither remote glory as 'abstraction' nor brute presence as extrapolated 'thing' may be assigned to it.

In the Newtonian era of knowledge, space and time were regarded as 'absolute,' which meant that space, extending in three dimensions, and time, extending in successions of instants, were regarded as secure and inescapable data for

all inquiry. They were the assured frame for the researches of physics, and they were 'there' as the fixed and certain 'locus' for all other science.

In that era the would-be student of psychological or social phenomena had no alternative but to accept that space and that time. His recourse was to detach the phenomena of 'mind,' and to develop a mind-language in parallel with the physical language. He could put directly to use in his work, or at least attempt, the language of successional time, but he could not apply the language of spatial extension at all.

Today physics has transformed its background. Its spaces and times are mathematical formulations developed to fit the needs of its observations, and its three dimensional units, L, T, and M, have become methods of knowledge and approximations to the statement of knowledge, in place of the basic certainties they were once taken to be. This transformation in physical knowledge not only releases the psychological and social investigations from the old absolute backgrounds of space and time, but it frees them from the necessity of accepting any particular substitute as authoritative for all of their purposes. By the same right by which physics transforms itself to meet the need of its expanding observations, the other sciences may now establish their own spaces and times—not in conflict with those of physics, but in expansion of them—to meet the needs of *their* observations. This right they will exercise as soon as they acquire the necessary freedom and capacity for widened observation.

Let us now bring into comparison the physical, the vital, and the behavioral sciences and techniques with respect to their spatial and temporal frameworks.

Consider the assertion: "Whatever phenomena present themselves to us in physical space-time are physical phenomena."

This assertion has different values to different men. It has two great central 'meanings' which, in expanded construction, seem often in sharp conflict but which, nevertheless, may be clarified and accepted, each with its own validity.

It has many blended applications, probably all invalid, which we may here disregard.

In one valid 'meaning' the assertion is that no phenomena are 'outside' or 'beyond' physical space-time, and that none permit examination otherwise than as 'in' space and time. In this case the word 'physical' equates with the word 'phenomenon,' and one or the other should be expelled from our vocabulary, since confusion is sure to result from the retention of both.

The other valid assertion is that among all phenomena only those which can be dealt with by the techniques of physical space-time shall be called 'physical.' Here one may reasonably forecast that ultimately all phenomena will receive technical physical interpretation; nevertheless for the present we recognize a classification of phenomena which is reliably based upon the present status of physical technique.

If both forms of assertion are valid, it is because the word 'physical' is not 'the same' word in both. In the same spelling and sound we have two 'words'; we have two different linguistic behaviors, two different Communicanes. We shall accept here both assertions, each in its own coherent reading. The first has the value that it eliminates from consideration all presumptive 'phenomena' which are taken as 'non-physical' or 'anti-physical'—for example, the old 'mental.' The second establishes definitely a great department of human research and knowledge, that primarily of wave and corpuscle. Both of these statements can be set forth and maintained within the postulate of the uniformity of knowledge.

Turn, now, to vital phenomena. These are phenomena which, while physical in the wider sense, cannot adequately be investigated, as knowledge stands today, by the use of the techniques of physical space-time alone.

For the word 'vital' we find two types of reading, comparable to the two types for the word 'physical.' One tells us that there are no psychological-social phenomena that are not 'vital'; that are not, that is to say, phenomena of organisms. The other specifies a field of phenomena to which physical formulations and techniques do not today reach, and

in which specialized biological formulations and techniques must be used; but a field, nevertheless, which has not yet expanded to include the psychological-social in its own direct inquiry. Taking the word 'vital' as two distinct Communicanes, we accept both statements as valid.

What, then, are the characteristics of a 'vital' space-time that serve to distinguish it in the techniques of research from the physical space-times? They lie, on the side of 'time,' in the particular durations in which its events must be inspected, and on the side of 'space,' in the inability to sever its extensions into physical parts which, on recombination, yield the 'life' that was there before.

In the older era the biologist often satisfied himself with what he could achieve by work in a mechanistic background of space and time, and immense preparatory work was necessary in that form. Otherwise he commonly went beyond the mechanistic scheme to assert a distinctive 'vitalism.' With the new relativity of physical space-time, and the new knowledge of radiant phenomena, he is no longer compelled to choose between the horns of this dilemma. The whole atmosphere of his inquiry has changed. He is proceeding to observe his 'vital' elements in durations of their own right. This is true within both his physiological and his phylogenetic inquiries, even though the specialized geneticist may still be carrying on under the older form. The 'living' or 'life' that once could be stressed only as different in nature from the physical, as in some sense beyond or above it, can now be set forth in harmony with the aims of physical research by permitting it to establish its own space-time form.¹ In place

1. Compare the position taken by Frank R. Lillie in his paper "The Gene and the Ontogenetic Process," *Science*, Oct. 21, 1927. He holds to 'determinism,' and assigns to physics and chemistry as their own affair all that they can accomplish, but adds: "Certain it is that physics and chemistry have no place among their categories for the ontogenetic process and *a fortiori* for the phylogenetic." This matches closely with the general attitude of the text. In more specific instance, Lillie accepts genetics as "an indispensable method for pheno-typical analysis," but he observes that the "time aspect of development which concerns the sequential order of embryonic segregation . . . is meas-

of the rigid requirements of beginnings and ends, origins and results, starts and finishes, the biologist can now observe his events in durational polarizations. What is distinctive for him is that the dimensions of his phenomena are more complex than those of the phenomena upon which physics specializes its investigation.

ured not by time units, but by events," and that "those who desire to make genetics the basis of physiology of development will have to explain how an unchanging complex can direct the course of an ordered developmental stream." As the presupposition of all studies, both in the field of genetics and of physiology of development, he asserts that "at the foundations of every phenotypic event there is an unanalyzed ontogenetic process, which expresses itself in time by qualitatively different types of reaction whether to the environment, or to the gene, or to both combined."

Compare also two essays by Alexis Carrel, "The New Cytology" and "Physiological Time," *Science*, Mar. 20, 1931, and Dec. 18, 1931. Carrel regards cells as in "physiological continuity" with their environment, so that the direct subject-matter of observation is "a system cells-environment." The animal body "is composed, not only of organs, bones, lymph, and blood, but also of duration." "Biologists should have conceived long before Einstein and Minkowsky that space and time are not separate entities but constituent elements of a four-dimensional continuum." Carrel writes with a limited construction of what he calls "psychological time." and with a narrowly specialized form of contrast between "physical time" and "physiological time." Disregarding these phases of his discussion, the point of importance for us is that his own observations and discoveries require a durational form of statement, and that, in order to obtain it, he uses, in effect, a construction of physiological space-time.

Another recent discussion in a similar spirit is that of C. E. Coghill in his address as president of the American Association of Anatomists (*Science*, Aug. 18, 1933). The field of study, he says, is one of "matter *in motion*," and of "structure *in function*," with these presentations as "space-time relations." "The neuro-embryological study of behavior shows that events within a behavioral system can be understood scientifically only as their relation is known to subsequent as well as to antecedent phases of the cycle."

The work of J. B. S. Haldane, cited in chapter XXI, may also be referred to as tending in this direction. This whole development is manifestly bound up with the newer biological envisionment of 'life' as an event in the world of organisms *and* environments, rather than as a peculiar 'property' of an organism.

When we pass from vital to behavioral investigations, knowing very well that all our phenomena are both vital and physical in the wider applications of those terms, we find again a sharp differentiation of durational-extensional form. Here the psychologies possess many words which, under proper application, serve to label the difference. That which is called 'perception' is a process of interconnection, an inter-relationship, different in extensional-durational form from that of either the physical or the vital. Such also is the case with the 'meanings' involved in the psychological and social activities and processes of men. All 'meanings' have this behavioral space-time form, which cannot be set forth in technically physical or in technically vital language as their adequate frame of description or investigation.

We have found many illustrations of these characteristics of the behavioral space-time in the course of our study. The calendar datings of social construction and conventional acceptance yield a certain preliminary guidance to the organization of behavioral inquiry; what they provide, however, is only the superficial and imperfect form of historical statement, and this is but a crude approximation to the durational form of the social event. The behavioral phenomenon has duration, and there is nothing about it that limits that duration to one sigma, one second, or one minute. A cabinet conference on an important policy may run continuously for an hour or a day; there is nothing about it, as event, which permits one to divide it into successions of small, fixed lengths, and interpret it in terms of them. It may likewise have wide extension, as where a conference runs by telephone, with some of the conferees in San Francisco and some in New York. It cannot be described or interpreted in terms of little segments of geographical space. Behavioral event is not divided into sections by the line of mortality. "The king is dead, long live the king." In the five hundred thousand or million years of 'human' development, the attribution of a duration of a few thousand years to what we may find it necessary to select as 'an event' need yield no shock. We know well enough how fictive 'anniversaries' are, and

what very slight formulation in mechanistic space and successional time 'Christmas-day' has, although its significance in behavioral space-time may be immense. The calendars change. The solstice, even, is an artifact, when removed from its own primary scheme of extrapolation and exhibited more fully in behavioral observation—observation within which the word 'artifact' itself gains new interpretation.

It is, above all, the 'meanings' in behaviors which characterize them, and which will dominate in the construction of behavioral space-time. 'Meanings,' as behaviors, are before us in extensions and durations. Our problem is to establish the characteristics of this behavioral form. After the world has wearied of its long attempts to assign 'meanings' to minds as their capacities or products, and after it has wearied of its attempts to assign them to this or that small bit of matter—after all the odds and ends of interpretation have been discarded—then one proceeds to observe 'meanings' naturally, naturalistically, as they are spread out in behaviors before us. Observe them thus, and 'behavioral space-time' becomes the name of the frame of observation, and shows itself in readiness for organization with the corresponding frames of observation of the other sciences. The 'abstractions' are gone; the direct observations, in expanded power of observation, take their place.

The physical and vital sciences have their units and dimensions. For physics these are intricately developed, even to the sophistications of physical self-appraisal; for biology they have become equally essential though still employed without the thorough analysis of status that they need. There is no magic about units and dimensions. Mathematicians, when they first attained a full sense of their units, went into religious rhapsodies over them; but that was long ago, and only backwater eddies of mysticism now remain. The units of physics are its tools, and appear as 'magic' only in the idle, rather than in the working, hours of the physicist; or when, far afield from his own proper knowledge, he demands that other sciences submit blindly to a uniformity

of his own 'nature.' Practically it was not until element and atom were attained as units that chemistry began its great advances; not till the cell was differentiated in inquiry that physiology could go far; and not till the gene secured consideration, however crude, that genetics flourished. Until behaviors can be read correspondingly in terms of units, behavioral inquiry will make no great progress. The psychologies have experimented with many candidates—'minds,' 'mind-states,' bits of 'body-movement,' 'acts,' 'activities,' 'nerves,' 'muscles,' 'brain-cells.' Some of these they have cast out as worthless. Others have failed to establish themselves as 'behavioral.' In but a single psychological system have we been able to find a deliberately selected 'unit' which is at once observably factual and specifically psychological.²

Always to be remembered is that units and dimensions are practical conveniences for research. Without such units the sciences cannot easily get along. Made too rigid and dogmatic, the units soon come to hamper progress. Granted functional values, seen as selective observations, permitted freely to transform at need—thus they yield their great results. The elements and atoms of the chemistry of a generation ago have proved to be statistical expressions; behind them lies reduction to electrons, and to wave as well as to corpuscular form. The original presentation of the cell in structural fixity has had to pass; durational values have been necessary, with function in direct terms of radiation.

In the constructions of Communicane and Communact, of Perceptane, Personan, and Objectan, in the field of behavior, we have units which have dimensional characteristics. Where in the vital sciences the dimensions run beyond the physical into what we call 'life,' so in the behavioral sciences they run beyond the vital into the region of 'meanings.' Communact and Objectan are dimensions of the Communicane, rather than 'parts.' Communicane and Perceptane stand in dimensional relationship to each other in the wider field of behaviors. They are of value as they may be used, and not

2. See chapter XII on Kantor.

otherwise; never should they have naïve expectation of enthronement as independently sovereign facts.

The status, then, of physical, vital, and behavioral space-times with respect to one another is as follows:

Physical space-time is the accepted frame of physics, not in any way as absolute, but always under competitive formulations in hypothesis, and with full freedom of development.

Vital space-time accepts physical space-time as a first approximation to its needs, but not as already formulated in a way that is adequate for the full descriptions of the units and dimensions of event which the vital sciences must study.

Behavioral space-time accepts the vital space-time as an approximation to its formulation, but must proceed to provide its own constructional frame-work for the 'psychological' and the 'social.'

This scale of approximations does *not* mean that behavioral space-time has any right to the claim that it may become a perfected form towards which the physical and vital space-times will take permanent place as approximations. It has no right to forecast the future; it may only assert its own place in the present. So far as any development of the present book implies, it is just as possible that behavioral space-time may in the end be compelled to transform itself into the physical space-time of future construction, as that the opposed transformation may be required. It is such freedom of development that the postulate of uniformity of *knowledge* permits, in contrast with the postulate of the uniformity of *nature*—of 'nature,' that is to say, in the sense of a 'part' of knowledge. If I were to speculate on the possibilities—though such speculation is wholly irrelevant to the work in hand—I might expect that our present-day formulations of the 'vital' would be transformed, under continuing growth of observation, in some of their aspects into the 'physical,' and in other aspects into the 'behavioral'; and that when the time came that the 'physical' and the 'behavioral' could be brought together into adequate scientific organization, it would be in a form which would not claim

pure descent from either the physical or the behavioral of today.

This background of physical, vital, and behavioral space-times made it practicable in Part I to inquire into the psychologies directly in their linguistic presentations. What could not be fully developed at the beginning of the inquiry now becomes plain. We took language as human behavior. We took the sciences as developments within communicative behavior. We took their very spaces and times as linguistically behavioral, though under an hypothesis narrowed to fit our immediate objectives. In none of this were we doing violence to 'fact.' The opposed procedure—that in which the detached 'word' is assumed to reflect 'fact' by the aid of creaking mechanisms of mentality—is the procedure wherein 'fact' is violated.

We have secured, in the end, a dimensional presentation of knowledge itself. The physical dimension is the most thoroughly studied dimension, and the one best known. Nevertheless, its progress within its own field has made clear that it is not the sole dimension of knowledge. Great as has been the yield in the era of its study in isolation, still greater is the prospect of yield, when the physical dimension is studied in its organization with other dimensions, when it is brought back once more into the complex situations of knowledge within which its provisional isolation was secured.

The most serious obstacle to progress in behavioral research lies in the hampering effect of the conventional language upon all our work. We are required to secure selective observations in behavioral space-time, but the common every-day words of our use are cut to fit a different pattern of space and time. We may establish a few specialized terms for our aid, but when we send them forth, they are in an atmosphere of unfriendly linguistic implication. We are compelled to use the common words, the common grammar. Research of this kind is not done in a vacuum. We

breathe a linguistic air. We investigate by formulating, by saying. We fixate what we observe for our own further use, and we attempt to gain verification for it in others' use, by giving it statement in the language of communication between men. To approach precision we must not only establish our necessary names, but we must gain control of the connective implications in sentence construction. Here is our greatest difficulty. The every-day language is 'mechanistic,' and it is 'personal.' It is not 'functional' as between these two characteristics, but correlates them in disjunction. Its background of meanings and its setting of implication are alien to the observations we have made. The 'functional' background of expression is what we require. We cannot establish this by sweeping decree; advance must be made slowly, step by step. Each instance of more precise expression, as we get it, must be used to build towards others.

Among the words which are alien to our manner of approach and to observation in behavioral space-time—and even more dangerous as their implications appear in ordinary sentence structure than when they are directly used—are 'part' and 'whole,' 'beginning' and 'end,' 'origin' and 'result,' 'cause' and 'effect,' and all words implying discreteness of separate fact and bare succession in time. On the 'mentalist' side, terms of similarly dangerous implication are 'concept,' 'relation,' 'abstract,' and 'definition." To many such words we have given consideration and caution as we proceeded. Terms of the first group may retain a preliminary descriptive value. Those of the second group are

3. Except in some case of negligence in cursory phrasing, these words appear in the text only where citation is made or where direct reference is required to other forms of construction in which they properly have place. Their casual use is so common that cumbersome expression often results where they are avoided; this is unfortunate, but not easily remedied. In place of 'definition,' I have used such words as 'specification' or 'application' to prescribe the desired manner of employment for names or other words which need specialized technical stress.

intolerable because of their interpretative presumption. 'Relation,' for example, implies both discreteness of fact, and mental initiative in the arrangement of fact.

In contrast with the implications of such terms, we have been employing words like 'function,' 'event,' 'aspect,' and 'phase,' and, to slight extent, the word 'activity.' We have embedded these words in a construction of behavioral space-time, with selective observation as itself behavioral in that space-time form. The words 'function' and 'event' are imperfect enough. The former derives from the technical procedures of mathematics, but only as these appear *after* infinitesimals have been dropped out as redundant. The latter derives from the physics of relativity, and from the subsequent endeavors of physicists to characterize their procedure in discovery jointly with their discoveries in process. Both of these words may be taken, with minimum difficulty, as fully durational in their factual implications. The words 'aspect' and 'phase' have excellent possibilities for further differentiation in contrasts of synchronisms and sequences within the complete functional presentation. In astronomy and physics 'phase' already is specialized for differences in temporal stage. In its more general uses 'phase' inclines to suggest conditions relative to others that are known, while 'aspect' is used to indicate a supposed 'intrinsic' quality; however, where this is the case—and sometimes the usage is quite the reverse—the distinction is one rather within ignorance than within knowledge. So far as other writers are concerned who hold views comparable to those of the text, my observation has been that they use 'aspect' and 'phase' interchangeably. I have followed this

4. Consider the forceful manner in which Clerk Maxwell makes use of the word 'aspect' in his admirable presentation of Newtonian mechanics (*Matter and Motion*, especially chapter III). Linguistic difficulties closely analogous to those discussed in the text are faced by physics in its attempts to secure adequate discursive treatment of its newer quantum and waves theories. For discussion of these difficulties see F. A. Lindemann, *The Physical Significance of the Quantum Theory*, chapter II.

custom, except where sequence has been clearly indicated; this was practicable, since my own analysis did not extend far enough to bring out in sharp form an adequate functional discrimination within 'event' between problems of sequence and those of concurrence. The word 'activity' has fair possibilities of development, but we have employed it sparingly because of the two forms of degradation it so readily undergoes; it implies too often a contrast with some 'passivity,' and it is too apt to be read in terms of 'actor' and 'act.'

Functional inquiry, investigation of activity and of event, when pushed to the more remote and intricate issues always exhibits to us the 'fact' and the 'knowledge' of the fact functionally bound together. Although the implications of the common language make sharp separations here, it is striking to note that, in the modern scientific terminology, no comprehensive terms arise to maintain the division. 'Physical' is compelled to do duty both for the facts and for the knowledge of them. The status of 'psychological' in this respect will require attention in the next chapter.⁵ We are therefore required always to be on our guard against building a description on one side of the assumed line of division, and then proceeding to read it, or permitting it to be read, on the other side. The very word 'behavior,' to which so much attention has been given, is a case in point. We have observed 'behaviors' and we have organized them in a full physical-vital-behavioral construction. With the adjective 'behavioral' it is comparatively easy to hold attention to that construction; however, when the noun 'behavior' appears, with its grammatically substantive implications, the reader will find ever-present the danger of taking it as in a factual detachment of its own,

5. The words 'biological' and 'vital' might seem to offer a differentiation between the knowledge of fact and the fact that is known, but the appearance is deceptive. 'Biology' is a blanket name, covering not only investigation into the 'vital,' but also very much 'behavioral' inquiry, and an increasing development on the physiological side in terms of biochemistry.

and most commonly in a convenient physical assignment to the 'body' or to some 'part' of the body which serves as substitute for the older word 'mind.' Caution against such a conventional linguistic degradation of observation is especially necessary as we approach the subject-matter of the next chapter. We are dealing with fact always with the inclusion of event, and with event always with the inclusion of fact. Severance, so far as the present inquiry goes, will be fatal to understanding. Severance, for aught I know, may in the long run prove better than functional organization; but that, I take it, is something to be proved, rather than to be crassly assumed today.

XXVIII. THE PSYCHOLOGICAL AND THE SOCIOLOGICAL

1. *Position to be Established*

All science is description; we postulate this, and we hold strictly to the postulate. We may distinguish, nevertheless, many types of description. Some scientists select specially delimited areas of nature, and seek for them the most comprehensive forms of gross description they can attain. Others, in contrast, strive for intimately and intricately analytic descriptions of process and function. Geologists, for example, segregate what they call 'the earth,' and proceed towards acquaintance with it in the fullest and most elaborate detail. Physicists and chemists, on the other hand, through their respective techniques seek to describe certain of the processes—more special, in one way of looking at them, but more general, in another—that are found, not only in 'the earth' thus segregated, but in all other segregated areas of research as well.

Undertakings of the comprehensively descriptive type provide a large part of the study of behaviors. The specialized social sciences will at once be recognized as of this nature, and along with them, most of the sociologies; the same, however, is true of the psychologies. If the reader will apply the distinction we have indicated (using whatever manner of formulation best suits him)¹ to the case of psychology, he may be surprised to note what a large part of the investigations are of this type: presentations, namely, of materials for gross description of the 'personal' procedures of the segregated areas of human bodies. With such undertakings we shall have, in the present inquiry, no direct

1. I avoid in the text all of the familiar phrasings for the indicated distinction, since the terms in which they are commonly set forth carry implications alien to our postulation and procedure.

concern. They and their ever-present agitation over the choice of book-titles may proceed as they will.

I shall here undertake to show that behavioral science, within its full field of research, requires the development of two correlated and complementary techniques of investigation, the one psychological and the other sociological.

It is frequently held that the sociologies, in their entirety, belong among the comprehensively descriptive types of scientific work; and that, in sharp contrast with them, psychology has analytic and functional characteristics, or perhaps enjoys 'causational' status. That attitude is here rejected. The 'sociological' and the 'psychological,' as we are to see them, will alike be inquiries of that functional type for which modern physics, in its most exciting regions of research, furnishes the illustration.

Psychological technique will be described as that manner of inquiry into behavior which examines it in terms of Personans in their orientation to organisms.

Sociological technique will be that approach which, primarily in terms of Communacts (t-phenomena included), examines communicatively established and organized forms of behavior in their orientation to populations—with the communicational phenomena under direct observation, and with the populations presented in behavioral space-time.

The differentiation between these two branches of inquiry is akin to that which shows itself between physiological and genetic-phylogenetic investigation in the biological distinction between organism and race. This comparison has a certain suggestive value, but permits no direct use. The present status of biological knowledge is much too inadequate in this respect to be dependable as a guide to behavioral inquiry. Rather, we have reason to believe that behavioral investigation can here proceed in advance of vital investigation; and that the two critical behavioral techniques, the psychological and the sociological, may even now be brought into organization such that their complementary status can be plainly exhibited. In other words, the differentiation of psychological and sociological tech-

niques is more sharply defined and can today be better understood than the differentiation of organism and race.

2. *Preliminary Considerations*

The key words of investigation for psychology and sociology have been 'psychic' and 'social,' and 'psychological' and 'sociological,' the two former being taken as indicators of 'fact,' the two latter stressing rather the active organization of 'knowledge of fact.' The word 'psychic' is today in collapse as a valid reporter of 'fact.' The word 'psychological' is hence commonly compelled to do double service both for 'fact' and for its systematic 'knowledge.' Nevertheless, in the former of these terminological assignments the word 'psychological' finds several rivals, such as the mechanistic 'behavior' of the 'movement-segment' behaviorist, and the 'neural' of the mentaloid psychologist. Frequently, also, the word 'individual' is employed by implication to specify the psychological as 'fact,' and occasionally it is thus used in formal definition.²

In our preceding investigations the contrast of 'psychological' with 'sociological' has been treated as obscure, while the contrast of 'individual' with 'social' has been treated as worse than obscure—indeed, as absurd in every generalized use that is made of it. Plausible use of this latter pair of words is of course easy for limited, special purposes; but it is safe to say that no single sentence has ever been written in which 'individual' and 'social' have appeared with a coherence of reference capable of extension to the wide general purposes of psychological and sociological construction. Our procedure, therefore, has been to examine all of the phenomena, whether of the one or the other type of

2. I do not refer here merely to what is called "Individual Psychology," since that is only a name for one specialized region of discussion within the wider 'individual' characterization. In better illustration consider Woodworth's assertion (cited in chapter X) that "psychology is the study of the activities of the individual as an individual."

description, under a wider presentation as 'behaviors' without forcing them into classificatory schemes which are less reliable by far than the direct phenomenal observation which we are able to make.

It need not embarrass us if the word 'psychological' is forced to do duty both to name a 'science' and to name the 'facts' with which that science deals, since we have already seen that no one of the advanced sciences has been successful in developing a vocabulary which firmly fixates a distinction in this respect. An immediate and very real source of concern is offered, however, by the confusion of meanings for the words 'individual,' 'social,' 'psychological,' and 'sociological' as these words are affected by surviving implications of the discredited word 'psychic.'

In sharp contrast with the word 'psychic,' we find the word 'social' today in full flower. Whether balanced against the word 'psychological' or the word 'individual,' it presents itself with pretense to good terminological standing, despite the hardy struggles that are made by some psychologists to destroy it. It is nevertheless in even worse plight than the word 'psychic.' It is a product of miscegenation between physical and psychical. Its manner of life is more disreputable than its origin. Its two-ring performance, in which it now plays opposite the word 'psychological' and now opposite the word 'individual,' is the reverse of edifying. It is put forward, now as something that is *not* 'individual'; again as something that is *not* 'psychological'; at other times, perhaps, as something that is neither 'individual' nor 'psychological.' What it then *is*, would indeed be very difficult to say.

For our present purposes we shall employ the words 'psychological' and 'sociological'; or, if the word 'social' is used, it will be only as a shorter rendering for the word 'sociological.' We shall confine ourselves, that is to say, to the consideration of systematic efforts to establish and organize fact; and we shall be concerned not at all with projects which, prior to the definite outcome of research, presume to

make basic determinations as to 'the facts,' or as to their essential characteristics.'

To avoid unnecessary complexity, we shall expressly narrow our discussion in two respects.

We shall consider only the situations of human beings—the bodies and behaviors of *Homo Sapiens*—and shall not cumber our pages with the many qualifications and extensions that would be required if other forms of animal life were taken directly into account. Since our 'human being' is the very animal that biology exhibits, no harm can result from this limitation.

We shall concern ourselves solely with the requirements of the widest situations of psychological and sociological inquiry and formulation; we shall not pause to note the many specialized variations of expression which are per-

3. The chaotic situation as between the sociologies and the psychologies may be recalled in summary.

The sociologists, almost without exception, assume that they have conveniently at hand certain facts which are definitely psychic or psychological. Each sociologist, as a rule, chooses some presentation conventional or convenient to him, and goes ahead with it. In this he closes his eyes to the open warfare among the psychologies themselves, where dozens of presentations are found in as many varieties of disagreement with one another. So far as a psychology is basic to his work, he has, therefore, no base at all.

The psychologist, on his side, finds his worst sources of confusion in the 'social' data pressing in upon him from all sides. If he is a mechanistic behaviorist, he may perhaps let this 'social' govern his vision without once admitting its presence; or he may entangle himself in subtleties about the human skin as a limit. Weiss, endeavoring to face this 'social' squarely, found that in his biosocial construction it tended to engulf his entire psychology. Madison Bentley, from a strongly isolationist starting-point, has become so deeply involved with it that he has been compelled to eject it as 'product,' while at the same time emphasizing it as 'condition'; he has indeed gone so far as to intimate that a replacement for his 'deficits' of the 'conscious' may perhaps be sought in these very 'products' themselves. Dewey, in his more general construction, has made it the background of all knowledge, including that of the psychologies themselves.

In addition to the psychologies and the sociologies, we find numerous undertakings called 'social psychology.' Of these, the less said, the better.

missible within the limits of this or that special branch of investigation. Appraisal of procedure for the purpose of these widest situations is often carried forward under the name of 'methodology.' From our present point of approach, however, we have to deal directly and immediately with observation and observability, just as in the most detailed special study. We shall take for granted that the reader understands that to reject any particular type of formulation from this wide point of view is not to object to its use in minor specializations of inquiry where convenience suggests it, provided that due recognition is therein given to its limitations.

We consider the bodies of men, and the behaviors in which they are involved.⁴

So far as the 'bodies' are concerned, we may take it, I hope, as universally recognized in this age of genetic research that they did not make themselves; nor have they been 'made by Nature' in complete individual isolation, each from the others. Both with respect to the genes transmitted through sperm and ovum and under the more general forms of phylogenetic inquiry, all these 'bodies' are physically connected and vitally continuous with others of their species.

This vital 'continuity,' once it has been recognized in biological inquiry, enters significantly into the wider constructions which biologists employ as frames for their observations. The 'space' and the 'time' which they use in their daily work—their 'vital space-time'—must allow for it. In whatever ways the biologists establish it, they hand it over as a part of the contribution of their science to the

4. The small, but often dangerous, word 'and' in this sentence must not be permitted to make trouble. It must be read as the merest of cursory connectives, permitting two situations, two preliminary manners of inspection, to come before us. We may need to see 'behaviors' in terms of 'bodies'; we may need to see 'bodies' in terms of 'behaviors'; or each manner of inspection alternatively may be desirable. We must remain free for any procedure.

students of behavior. It becomes an important phase of the naturalistic conditioning of behavioral research. The possibility then arises that the functional exploration of the field of behaviors may have its 'continuity' values—its 'racial' aspects—just as directly and immediately as it has its 'organic' aspects, its 'individual' aspects in the organic sense. This is before us as a possibility, and nothing more; but it is not one safely to be ignored.

I shall now make the following assertions as to the general status of our inquiry as it appears to me under its observation in behavioral space-time, giving these assertions no radical or dogmatically existential stress whatever, and allowing them the values only of provisional factual report.

I can nowhere observe any phenomena of the types called 'social' which are not themselves behavioral.⁵ Equally with the 'psychological,' their interpretation lacks all present possibility of successful achievement under the use of specifically physical or vital techniques; equally must the techniques of their investigation be directly behavioral.

I can nowhere observe any of these 'social' behaviors which are not at the same time behaviors 'psychologically.' Social phenomena, as behaviors, are always phenomena of *men* in action; they are behaviors which take 'individual' reference, reference directly to human organisms, regardless of whatever other forms of reference as 'social' it may also be necessary for them to take.

I can nowhere observe any 'psychological' phenomena—any behaviors of 'individual' men in action—which I can

5. The 'artifact' is called 'social'; but, however one may endeavor to give physical isolation to the specimens on the museum shelf, it is only in a fully behavioral inquiry that they, as artifacts, can be investigated at all. Money may be of gold, but the investigation of gold as money is behavioral throughout. Air waves and animal bodies alike condition the investigation of the dcaud, but neither physics nor biology inquires into it, or secures so much as a hint as to its appearance. What remains, after behavioral inquiry is completed so far as we can go with it, is not 'social,' but 'physical' or 'vital.'

safely say are wholly and certainly free from any and all effects of that inter-influencing of man and man which is studied under the name of the 'social.'"

In summary, I have never found a situation of behaviors in which I could assume a substantive separation between psychological behavioral facts taken as 'individual' and other behavioral facts taken as 'social,' in such a way that I could regard it as reliable *for the more general purposes* of the organization of behavioral knowledge and the pursuit of behavioral research. I have never found social *things* in basic separations from individually psychological *things*; nor individually psychological *things* in basic separations from social *things*.

Such being the case, I cannot establish a coherent distinction between the functional techniques of psychology and sociology upon the basis furnished by any rough-and-ready distinction set forth or purporting to be guaranteed by the dubious words 'individual' and 'social,' or by any of their substitutes. I cannot do this any more than I can make a radical distinction between 'individual' and 'race' for the purposes of biological inquiry—whatever practical and limited distinction between departments of inquiry may be made by the use of such terms.

The postulates under which we now proceed are the following:

1. That of the uniformity of knowledge.⁷
2. That of the distinction between the physical, the vital, and the behavioral as techniques of inquiry, separated by intervening chasms of as yet unachieved interpretation.⁸

6. See chapter XXVI for pertinent data and forms of observation. With respect to this assertion, I am not saying that 'behaviors as individual' cannot properly be segregated for special purposes of inquiry, nor that mechanistic space-frames cannot be made to yield the appearance of disjunction. What I am reporting is observation in the eventfulness of behavioral space-time as well as I can secure it, with due allowance for marginal situations as between vital and behavioral.

7. See chapter XXV.

8. *Ibid.*

3. That of a behavioral space-time, framing observation in functional rather than in mechanistic terms, and presenting phenomena as aspects or phases of events, rather than in the disjunctions of part and whole, or of mechanistic cause and effect.⁹

As corollary statements we have:

1a. That, with the disappearance from 'knowledge' of a basic 'mind,' the presumptive 'matter' likewise disappears as 'basic,' all specialization of stress upon the latter becoming meaningless when its correlate is gone.

2a. That the 'marginal' cases between the different fields of inquiry may safely be left to work out their own destinies, with whatever consequent reconstructions of the postulation they may in the future require.

3a. That radical determination of 'facts' in assured disjunctions is illegitimate, as much with respect to 'persons' as to 'things.'

3b. That neither the mechanistically nor the biologically constructed 'environment' can be transported forthright into behavioral space-time, and placed directly in control of observation therein.¹⁰

Our dominant problem now is to discriminate between psychological and sociological techniques of investigation in such a way that they will be mutually helpful to each other, and that their joint procedures will cover the full field of behavioral inquiry. Just in so far as their correlation fails of coherence, will the necessary mutual helpfulness be lacking.

We have thus far secured, as guides in this enterprise, a form of postulation and certain preliminary statements of observations that can be made within that form. These aids settle nothing. If they lead to a sound organization of techniques, well and good. If they do not, they themselves

9. See chapter XXVII.

10. See my paper "L'individuel et le social: les termes et les faits," *Revue Internationale de Sociologie*, 1929, vol. 37, p. 266.

are the worst sufferers. In the meantime, they permit us to eliminate from our consideration certain forms of construction which at once appear as wholly alien to our observation and required procedure.

In the first place, we shall not arrive at any sociology which will present itself as a fourth great type of scientific enterprise, following upon psychology as 'higher and more complex' in the sense in which biology follows physics, and in which it is often assumed that psychology follows biology. We shall not find psychology 'conditioning' sociology in the manner in which we find physics conditioning biology, and the latter conditioning all behavioral inquiry; nor shall we find any open gap between psychology and sociology, comparable to the gaps which modern science presents between physics and biology, and between this latter and behavioral inquiry. The psychological and sociological techniques, as we may expect to find them, will have much closer functional organization in the immediate possibilities of their employment.

In the next place, we shall find no segregated psychological phenomena capable of being taken as 'causes' of sociological phenomena, any more than we shall find sociological phenomena that claim to be such 'causes' of psychological phenomena. Our preliminary observations in the full behavioral field have already run far too wide and deep to permit any such crudity of mechanistic cause and effect to be introduced.

Putting this in another way, we may not expect psychology, as it concentrates its attention upon the 'individual organism,' to have the permanent status of 'fine scale' research, in contrast with some 'large scale' research assignable to the sociological techniques as these latter concentrate upon the 'social.' Rather, the anticipated development will be akin to that of the last two generations with respect to physics and chemistry. Only a generation ago, physics was standing to one side and watching chemistry deal with phenomena of 'finer scale' than its own; today, however, physics has come to deal with phenomena so 'fine'

that, over against them, the chemical atom appears as a gross statistical presentation. One talks sometimes of physical chemistry, and again of chemical physics, but every investigator today knows how artificial have become the distinctions between the titles of these two great forms of scientific enterprise.

We have to anticipate, then, two forms of research, equally functional in their technique, equally factual in their observations, and equally solid in their vital and physical foundations at every step in their work.

In considering the organism, the human body, as it enters behavioral research, we start with it primarily as an 'individual' rather than as a component of the race. The distinction, even in strictly biological application, is far from clear,¹¹ for we know perfectly well that we have no 'individuals' that are not components of the race, and no 'race' other than its 'individual' components. Evidently what we have is a 'selective observation' when we speak either of the biological individual or of the biological race separately. Let us accept this distinction as biologically usable, and proceed from it to psychological and sociological situations.

It would be a mistake to start out by assuming that the factual presence of a 'biological individual' guarantees to us the factual presence of a corresponding and closely correlated 'behavioral individual.' It may do this, or it may not. The conventional view is that it does. That view, however, is a clear case of survival from the language of 'souls' or 'minds.' Sharp severance of the two specifications of 'individual,' with 'quasi-localization'¹² of the 'behavioral' with respect to the 'biological,' was the procedure of the old mentalist. Crude identification is now the procedure of the physiological psychologist of the mentaloid type. Glori-

11. It is the dogmatic mechanist, however, who alone has a rigid distinction forced upon him in this region, for which he lacks all competent means of analysis.

12. *See Rev. Int. de Soc.*, vol. 37, p. 255.

fication of an obscure presentation 'activity'—perhaps of the "individual as an individual"—is a common procedure of the neo-mentalists.

Just as the biological 'individual' is a selective observation, so also is the behavioral 'individual.' If the theorist is to perform an act of identification and fusion upon the two, he must proceed with due regard to the selective processes themselves, and not by way of rough-and-ready assumption; this is all the more true since the biological 'individual' itself comes to him in an unclarified form. Pursue the neurological and muscular inquires by the use of vital techniques as far as they may be carried. Correlate them with behavioral descriptions. Get from them all the advantage possible for behavioral interpretations. Improve each form of description and interpretation by the aid of the other. But recognize the differences between the two. The physiologist can refer intestinal events to the nutrition of the body, and can continue with their study under strictly physiological technique. When, on the other hand, he refers neuro-muscular events to the behaviors of the body, he quickly reaches a point where his techniques fail. Even where the behavior in question is so simple as an ordinary every-day event of man-and-dog interaction, the intra-organic investigation, however necessary as an aid, does not actually prolong itself far enough to attain technical description.

For situations of *behavior* as seen from the point of view of the participating organism, the words Personan and Personane were introduced in the earlier chapter (XXV) in which our scheme of namings was displayed. The first of these names was there differentiated into the specifications P-personan and C-personan. Thus far, however, we have made no direct development of the words, allowing them to appear merely by way of orientation with respect to other phenomena which have been directly under study. Taking them always as names for behavioral observations, we may now inspect them as decisive words for

use in establishing a coherent field of research for a specialized science of psychology. Let us first bring them into working organization with the words 'organism,' 'individual,' and 'person,' limiting our consideration, as throughout, to the 'human' field.

Organism is the biological man as he can be studied by biological techniques under a biological selective observation which views each man in separation from his fellow men, and which, therefore, is in contrast with the differently selective biological observation of 'race.'

Individual is a vague, unreliable, and often deceptive word which purports to transplant, implicitly or openly, an assumed status of the biological organism as 'separate' into the behavioral field.

Person sets forth the situations of behaviors as they present themselves to 'common-sense' in localization with respect to the animal organism—that is to say, as they present themselves under the current linguistic conventions, prior to adequate analysis and description.¹³

Personan selects for definite observation all such phases of behavioral situations as can be technically investigated in orientation to an organism.

P-personan selects (within the general observation of Personan) those situations which can attain *provisionally* satisfactory behavioral description in their orientations to the organism directly by way of the P-objectan.

13. To discuss 'personality' or 'personality traits' in place of 'person' does not directly advance analysis, so long as the background of presentation retains implicitly the older construction. To make 'personal behavior' a special type of behavior correlated with other behaviors, such as 'vocational,' 'religious,' or 'domestic,' is primarily a change of naming which may or may not be accompanied by advance in analysis. The analogical extension of 'person' in the definite case such as the 'legal,' or in the many vaguely sketched 'social' forms, furnishes food for reflection, but is of no direct concern at this point. In the next chapter (section 5), 'person' will show itself as a form of gross description contrasted with another form of gross description, namely, 'society.' In such gross descriptions the person cannot cover all of the 'social' any more than society can cover all of the 'personal.'

C-personan selects those other situations of Personan in which behavioral description in attempted orientation to the single organism by way of the P-objectan shows itself at once to be imperfect, incomplete, and inadequate, and in which C-objectan must be taken directly into account in the observation.

Personane names the case in which selective observation and construction is deliberately directed upon that organization or consolidation of Personans currently indicated by the use of the word 'person.'

This word Personane, in its schematic employment with respect to the other terms above, requires one further remark. While the use of this name takes us a considerable step towards the clarification of observation, it is still susceptible to variations of emphasis. In this respect it is like the word Objectane,¹⁴ and similar caution must be used. If I should attempt to provide for all of these variations, a great and unnecessary complexity of terminology would be required: unnecessary because I have no desire to deal here with all of these cases in detail. Central to the presentation of Personane is its use as a permissible selective observation, in which the full display of Personans oriented to *an* organism is inspected as in organization in that particular respect. On the one hand, this may be stressed as realistically disjunctive Personane, a procedure which, in effect, asserts that the outcome of all future inquiry will conform closely to our traditional attitude towards 'person,' under the presumption that this traditional attitude is not vague, but firm and solid at the core. On the other hand, it may be stressed as whatever form of synthesis future research will yield through the analytic examination of Personans. It is this second attitude which we assume here, except as the realistically disjunctive Personane is introduced in Diagram A, a few pages further on, by the special symbol II, to aid in bringing out the characteristics of two contrasted methods of scientific attack.

14. See the remarks on that word in chapter XXVI.

Under our own application of the word, which is postulatory instead of realistic, we have not the slightest reason to infer that 'person' will have the fate of 'ghost,' and, in analysis, vanish away. This has already been stated, but should be stressed anew here. Rather, the outcome to anticipate may be like that for 'star' in astronomy, where, if the stars have ceased to sing together, or to intervene directly in the affairs of men, they compensate by shining more wondrously than ever earlier man could have dreamed.

3. *Psychological Technique*

Within the full field of behavioral research the technical procedure of psychology distinguishes itself from that of sociology by its concentration of inquiry upon Personans and their organization.

The Personan, when first introduced,¹⁵ was spoken of as the behavioral participation of the 'individual' organism in Communicane and Perceptane. This was cursory description, adapted to the context as seemed most practicable at the stage of development we had then reached. Again, it was described as that phase of a behavioral situation which can be investigated in orientation to an organism. Here the word 'orientation' served merely for the provisional carry-over of meanings awaiting development. If we now use the word 'Personan' to give specification to psychology, no magic fixation of status for psychology is obtained. We obtain, instead, something of real importance: namely, a fully functional presentation both for problems and for techniques.

We may 'orient' the Personan to the organism for study. In conformity to postulation, it will appear as aspect or phase of the organism, but not yet in a developed technique of description which is capable of crossing the margins between the vital and behavioral fields of observation. We may also 'orient' the Personan to the full behavioral

15. See chapter XXV.

situation. Now it will appear as aspect or phase of this latter, and this time in a coherent form of description, definitely on the way towards perfected observation. This two-fold use of the words 'aspect' and 'phase,' one leading across behavioral inquiry and the other towards vital inquiry, involves no conflict under our general postulation.

The Personan is not before us in any totalitarian presentation of the 'organism itself,' nor in any totalitarian presentation of 'behavior itself.' We may, if we will, subsume both the behavioral and the vital aspects under some wider presentation. Indeed just this step is required of us, if we are to hold closely to the postulate of the uniformity of knowledge. For this wider presentation the word 'activity' may be used, but only with the most careful precautions against its abuse, and with a determination to permit it no standing except that of a verbal placeholder under the postulate of uniformity.

The Personan, then, may be called 'activity,' but not in the animistic version of the neo-mentalistic, and not in any sense that opposes it to an assumed environmental 'passivity.' It may be compared with the 'act' of the older linguistic constructions, but only after every implication of a disjunction of 'act' from 'actor,' or of 'actor' from 'organism,' has been overcome. It is comparable to Watson's datum of observation, but not in the mechanistic spatial and temporal construction which Watson so unfortunately adopted almost at the very moment when the authority of that construction was beginning to disappear from the sciences of its origin. It is closely comparable to the organism's 'function' in the "segment of behavior" set up by Kantor, under the previously noted qualifications as to his construction. The technique of the investigation of Personans will be 'inter-actional' in Kantor's sense; it will deal with 'experiencing' and with 'trans-action' in Dewey's sense; it will isolate for inquiry the 'operative modes' just as Madison Bentley desired psychology to do. Since this last is perhaps the best characterization we can find for it, I permit myself the occasional use of the phrase as we

proceed, hoping that my use is not too far removed from that of its original intention.

Psychology, so viewed, ranges the full field of behaviors, even though it does not pretend to accomplish by itself *all* of the scientific work that must be done with respect to behaviors. It ranges all the 'social,' not in the sense that it itself undertakes all sociological investigation, but in the sense that there is no 'social' which runs 'beyond' it, or falls 'outside' of its possibilities of inquiry; the 'locus' of its phenomena in behavioral space-time is as broad as the full behavioral field. It recognizes all the 'social' as behavioral, and as presenting aspects of Personan. Upon these aspects of Personan psychology concentrates its attention. Psychology, then, is not constricted by any distinction which may be established between P-personan and C-personan; it has as much power to direct its specialized attention upon the latter as upon the former. Where the C-personans show themselves in the form of Communact it is all the more eager for their examination. It faces here, however, a field of work, not one of dream or dictum. Correlated with it are other techniques of investigation, those called sociological, but there is here no split or conflict—rather such a correlation as may be found, by analogy, between the physiological and the genetic inquiries of the biological sciences.

Psychological technique, thus described, accepts the 'organism' in its most highly perfected biological specification, and not in the illicit implications of a detached 'individual' derived from more primitive approximations to knowledge. It orients its inquiry directly and fairly to that biological background. It takes its Personans in their full physiological setting, and is guided and aided by all of the information it can in this way secure. It has good hope of organizing its behavioral terminology to the vital terminology with an increased precision.¹⁶ It can even, we may hope, secure a reputable specification for the notoriously disreputable

16. For the need in this respect, *see* Chapter XVI.

term 'intelligence,' now a confusion of social participations with presumptive possibilities of participation.

All four sectors of problematic implication in the old mind-language, as we examined them in Part I, are taken into account in such a psychological technique. It retains all of the characteristic behavioral activities which the mind-language adumbrated, while at the same time it strips off the traditional abuses. It is not satisfied merely with getting rid of 'immateriality' in order to fall into the arms of a supposititious 'materiality.' It examines 'apprehensibility' and makes the full behavioral procedure its problem of inquiry, but not in the form of a capacity or faculty of either 'mind' or 'matter.' It gets rid of the 'isolationality' which is a definitely mentalist survival, thus freeing itself from the last of the remnants of the substantively detached 'psychic.' It makes, under its postulation of physical and vital conditioning, a full reckoning with the presentations of organism-environment which appear in the borderlands of mind-language and physical language, and accepts the biological situations in their own terms, only to face its own characteristic problems of behavioral environment freely in its own behavioral terms.¹⁷

I hope it is entirely clear that this presentation has no thought of attempting to manufacture a psychology in rivalry to any of the existing psychologies. The problem before us is that of identifying techniques and clarifying their formulation, and it is only as this formulation accurately reflects the essentials of existing procedures that it can have value. So far as I am able to judge, the approach outlined does not hamper or in any way reduce the

17. Recall the present status of confusion with respect to the term 'environment' as we have seen it in chapters VII and XI. Dewey sets up a principle, but leaves it imperfectly developed. Hunter and Weiss attempt to section environments. Madison Bentley proposes their ejection from all psychological research. Kantor alone in the psychological field makes direct constructive study of the behavioral extension upon which the term 'environment' insists.

work which competent psychologists of disciplined scientific interest are now doing. Psychology can proceed in terms of life-careers, reactional biographies, or social status (to use the terms, respectively, of Dewey, Kantor, and Weiss), or in terms of any of the comparable presentations. It may, if it wishes, set before itself the goal of Personane as an enriched presentation of knowledge, even though it forfeits the primitive 'person' as substantively assured datum.

This approach strips off, nevertheless, many of the pretensions of the pseudo-psychological camp-followers, the bane of all true scientific investigation. It also eliminates some of the over-rash expansions of language which appear around the edges of the psychological inquiry proper. It no longer permits one to treat a cultural specification of behavior, identified at a particular time and place, as substantive and 'concrete' datum in its own right for the technical work of psychology.¹⁸ The proclamation of the rigidly individualistic psychologist that, without any directly specialized inquiry into social-behavioral situations, he can work out the mechanisms by which all society functions, will find itself in an unfriendly atmosphere. The lingering feeling that psychology must face the task of being a guarantor of all 'knowledge' will disappear; and for liberation from obligation of this last sort, I suspect that every serious psychological investigator will be duly thankful. Psychology, as at once a part of 'knowledge' and an inquiry into certain phases of 'knowing,' will be, it is true, complexly framed; but it will be from the widest fields of science that its tests and standards are secured.

18. An interesting illustration in current literature is the report on the "Second Psychological Expedition to Central Asia" by A. Luria, summarized in *Science*, Sept. 1, 1933, p. 191. "The fundamental aim," he writes, "was the study of those peculiarities of the psyche which are the result of various historical conditions, and to trace out the fundamental laws in the development of psychological processes."

4. *Diagrammatic Comparison of Postulations*

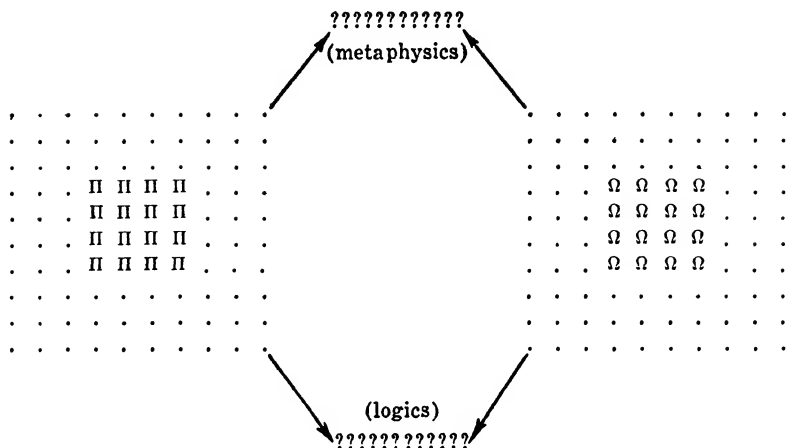
Before proceeding to discuss the sociological techniques which are correlated with the psychological in the full field of behaviors, I shall pause long enough to emphasize sharply in diagrammatic form the characteristics of the postulation we are using. Our procedure is descriptonal and functional, both in analysis and in synthesis; it is not procedure of a type that proposes to secure an alleged synthesis for 'facts' which are first taken as primarily 'known' in separations.

The older procedure, that in which Objectane and Personane are taken primarily in disjunction, each in its own discreteness, has had its long historical trial. It involves, with respect to both of its primary presentations, that basic identification of 'word' with 'thing' which we have called the 'Aristotelian Effect' in language. Physical research has indeed made great progress in the replacement of its old discrete isolations; behavioral research has made no corresponding progress. The disjunctive Personane still retains most strikingly that form of mind-language display which we examined under the name of 'isolationality,' and Personane and Objectane still stand over against each other in sharp basic separation.

Diagram A exhibits the outcome and the present status of inquiry where Personane and Objectane are taken primarily as disjoined data. The Greek letter Π is used for the realistic disjunctive Personane, and the Greek letter Ω for the realistic disjunctive Objectane; the Π 's and Ω 's are taken as alike indefinitely numerous. These two classes of phenomena undergo their separated inquiries, but the obligation is ever pressing to bring them into organization, whether as a matter of interest on its own account, or as a requirement for further progress in the separated fields.

Under this form of attack, when the connective interpretation is sought by way of the perceptual activities, and when an endeavor is made to throw a bridge across the two termini in perception, the result is an array of ques-

A. *Synthesis of Data Taken in Disjunction*

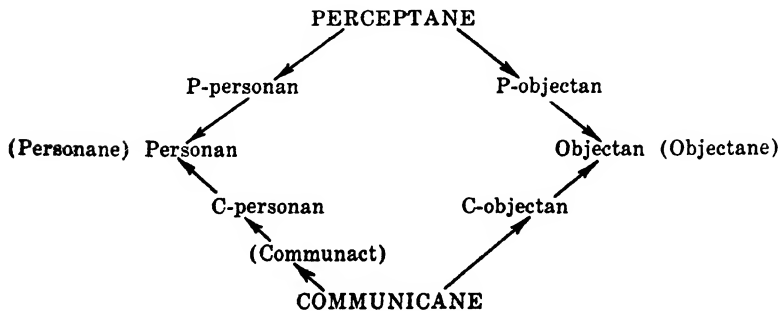


Π represents disjunctive Personane

Ω represents disjunctive Objectane

In varying constructions, the arrows may all run idealistically to the right, or materialistically to the left.

B. *Functional Analysis of Observable Situations*



tion marks. This array is known as 'metaphysics' or as 'epistemology,' and it takes especial delight in stressing its own insolubility.

If, in contrast, attack is made by way of language, the outcome is equally dubious, equally an array of question marks. Here the procedure is called 'logic,' and far from stressing insolubility, the logicians are always 'almost' sure that they have attained certainty; always, nevertheless, a new generation of logicians comes along to dispel that assurance. Precise as logic may be where it can work within well-defined boundaries—a precision comparable to that which perception may attain under sharply outlined conditions for its own type of procedure—the result, when a wide application and interpretation is sought, is, and always has been, paradox.¹⁹

Diagram B exhibits the alternative forms of observation and the alternative postulation and procedure which are employed in our present inquiries. We now face, directly instead of indirectly, those very problems of connective construction which were raised in such mysterious forms in Diagram A. Instead of retaining the disjunctions under special observation, we concentrate our observation and attention upon the materials of the problems just as they present themselves to us. We select Perceptane and Communicane for direct attack in research. Analysis then proceeds *via* the polarizations of Personan towards the anticipated constructions of Personane, and *via* the polarizations of Objectan towards the anticipated construction of Objectane, allowing Personan and Objectan full freedom to establish themselves in any particular form or to refuse any form, according as progress of inquiry may demand.

With respect to Diagram A, let it be plainly understood that no objection whatever is raised against the procedures it sets forth, where they are undertaken clearly in the form of selective observations and with equal clearness as postu-

19. The situation in the foundation problems of mathematics, where these are pursued as strictly and definitely logical in nature, has been exhibited in my book *Linguistic Analysis of Mathematics*.

lation for research. All that is asked is that frank admission be given to this postulatory status; and that the procedure be appraised, and be permitted to stand or fall, by its results. In the special case of psychology, under that procedure the aspectual observations we have named Perceptan and Communican must be brought out in safe scientific presentation with respect to Personane and Objectane. Their status today is wholly unsound in any development that has yet been given them, so far as our own exhibit of the psychologies has been able to show.

XXIX. THE PSYCHOLOGICAL AND THE SOCIOLOGICAL (Continued)

5. *Sociological Technique*

We are now ready to appraise the specialized sociological technique which has been forecast as the necessary complement of psychological technique, if the full field of behavioral phenomena is to secure adequate investigation and coherent organization.

Psychological technique ranges this full behavioral field, but falls short of accomplishing all that must be accomplished within it. In compact phrase: Except as processed by Personans, no 'social' behaviors; nevertheless, no 'social' behaviors in any sharp isolation of Personans, nor in any exclusive process of Personans alone.

Sociological technique, if it is to be a true complement to psychological technique, must range equally the full behavioral field. It must be equally firm in its physical and vital setting, equally factual in its basic observation, and equally functional in its development. It must be equally free from pretense that by itself it is adequate for behavioral inquiry in isolated proprietorship.¹

Such a sociological technique may be established in further study of the processes of the directly observable

1. Again I summarize the need for psychological and sociological clarification as it is exhibited by the current status of pertinent professional enterprises. We have crowding upon us great masses of extremely important 'facts called social,' and we find a lively, but in the main futile, activity on the part of many social sciences towards their interpretation. We have, on the other hand, the failure of the psychologies to deal adequately with the social facts which they assert their psychological facts produce, or which they accept as conditions; and we have the destructive reaction of these social facts upon the psychologies in ways which reveal within the latter regions of excessive structural incoherence.

Communicane. Wherever the behaviors of men are 'in society'; wherever they involve and are developed through contacts (and whether or not the word 'society' currently applies); wherever 'personal' behavior is a social 'participation' (and just insofar as its observation and construction as participational can be obtained); there 'fact' and the 'technique of inquiry into fact' are alike communicational. There, also, the thorough pursuit of this technically communicational, sociological process is necessary, not merely as supplemental, but as fully complementary to the technically psychological interpretation.

In communication, then, we find the specifically sociological technique. But observe that this communication is not taken as if it were joined together out of separate building blocks; nor is it taken as if it could exert power or obtain dominance in any detachment of its own. It neither atomizes itself into human mites, nor does it strike with Berkeleian fang at what is beyond its province. The communication with which we are to deal is a technical procedure of populations. It is a form of event—itself directly durational—which is process in the events of the populations in the behavioral space-time in which we inspect them. It is 'work,' and is taken as work—work that is essential to the interpretation of all work that is done or observed as done. It is a behavioral process, and a technique of behavioral inquiry as well, within a field of behaviors, and not elsewhere.²

2. I shall use the word 'technique' with increasing freedom in the course of the coming development, occasionally joining with it the word 'process.' Both words are to be understood as 'functional' within the scope of our general postulation, with reference to the 'knowing' as well as to the 'known.' When development has progressed far enough, a better specification of meaning will be secured for the word 'process' as within the range of 'event.' These words 'functional,' 'technique,' and 'process' are all admittedly poor, but the best I find available. They must be read in sympathy with the surrounding language, and not in imported meanings of conflicting type. It is better to proceed with recognized hazes than with too rash an assertion of precisions.

From the point of view of Diagram A of the last section of the preceding chapter, the above statements will have little import. A certain 'abstract,' 'historical,' or 'statistical' meaning may perhaps be admitted for them, but in direct assertion and stress they are aliens; so far as they are grasped at all, they will at once be rejected. From the point of view of Diagram B they will be comprehensible, but even here they may perhaps be regarded as generalizations without important significance for research. We must sharpen their formulation. As a first step to this end we shall examine certain possible manners of envisaging the sociological technique, and then shall reject them. They would be easy to adopt, but are defective and bound to lead us far astray from our objectives.

The psychological has been described as the procedure of Personans, and the Personan has been described as behavior selectively observed in orientation to the organism. Some inquirer may now say that if the psychological is thus oriented to the organism, the sociological will be a form of behavior that does *not* take direct orientation to the organism. This would be a gross abuse of the construction we have adopted. We have guarded against it at every step; nevertheless, it is apt to present itself. The old 'mind' was just such a "flight from reality," and most of the sociologies of the day esteem themselves in some measure aloof from, or superior to, the 'organic.' Implications of this kind work steadily beneath the surface of their statement. We, however, find nowhere any behaviors that are *not* oriented to organisms, and none that can escape investigation from that point of approach. The suggested interpretation might be neatly logical; it would also be a neat illustration of the folly of logic where logic aspires too high.

Coming a little closer to scientific factuality, some other inquirer may find temptation in the biological opposition of organism and race, as we have occasionally brought it to consideration. He may then seek to find in 'race,' or in some behavioral representative of 'race,' a 'locus' for the

sociological processes in distinction from the psychological. The suggestion would be most unfortunate, if taken as anything more than a hint at impending problems. The biological differentiation is imperfect enough in its own field without being given authority over a more complex field.

Two other defective forms of inspection are apt to suggest themselves when one examines the contrasts of observational subject-matters which appear in Diagram B. The Communicane, for example, is seen in balance against the Perceptane, while the Objectan appears in a form of opposition to the Personan.

The Communicane has for its 'locus' a population; it cannot be forced into the spatial limits of a 'single,' selectively isolated man. The Perceptane, in contrast, designates phenomena that are commonly looked upon as presenting direct contact between a 'separate' organism and an isolated 'thing' of the environment. The great body of investigation in psychological laboratories and treatises deals with Perceptane.³ What is easier, then, than to employ this form of contrast, and to seek to establish sociology directly in terms of Communicane?

We have here an important bifurcation of investigations. It lies, however, between different enterprises of the type which we have called "comprehensive forms of gross description." It will not directly yield a differentiation of *techniques* such as we are seeking. In gross description the Communicanes offer us a most interesting field of inquiry, and the results of such inquiry furnish the greatest aid towards the establishment of our required technique; but, thus taken, the full set of Communicanes is merely one segregated area of inquiry, not nearly wide

3. The Perceptane presents very closely Kantor's "segment of behavior." The difference between his determination of the 'psychological' and our own has already been pointed out. His technique comes to deal with linguistic communications as 'bistimulational behavior'—as 'double-stimulus function'—in which the 'person spoken to' is an 'auxiliary stimulus.' See his *Survey*, p. 299.

enough to cover the full behavioral field. Psychology deals technically with the Communicane by way of its Personans; on the other hand the technical communicative process is of the greatest importance for the understanding of the Perceptanes, as we found in our joint study of C-objectans and P-objectans in chapter XXVI. This by itself is sufficient to show that the distinction between Communicanes and Perceptanes in gross description, no matter how important we find it for other purposes, can not by itself directly yield the differentiation we are seeking.

The other possibility of false appraisal that may arise from an inspection of Diagram B is that in which the opposition of Objectan to Personan is stressed. If specialized attention to Personan is characteristic for psychological technique, may not Objectan perhaps furnish the clue to sociological technique? A suggestion along this line would miscarry completely. It would involve an illegitimate simplification of the scientific situation. The subject-matter of every science whatsoever enters that science in the form of Objectan. The Personan itself, as psychological observation and as clue to inquiry, enters psychology as the specialized Objectan of psychology's selection.⁴ The subject-matter of physics is not primarily and dogmatically Objectane, but a physical specialization of Objectan; so also the subject-matter of biology is a vital specification. Each of these sciences chooses its field, learning through long experience how to choose. Sociological research must observe and identify its own field, if it is to be a scientific division of research at all. The light-rays are as essential to the events we call Personans, as are these to the presentations of light-rays.⁵

4. The long disputes of the psychologies over introspection have reached no factual agreement; rather, they have degenerated into quibblings over fine shades of meanings, ever more remote from the factual, until they have, in great measure, died of inanition.

5. The attitude, surviving from theories of 'soul' and 'mind,' in which a clotting or fixation of Personans, namely, a 'person,' is set over against all 'nature'—'mind' against 'thing,' 'subject' against 'object,'

To summarize: the sociological technique cannot be established directly in terms of Communicane as opposed to Perceptane, nor in terms of Objectan as opposed to Personan; it cannot be stated adequately as racial in contrast with organic, and it cannot be split in any way from the organic base. Nevertheless, it exhibits phases of all these manners of differentiation. It rests in a special form of Objectan established primarily with respect to populations rather than to isolated members. Its procedures must be learned primarily in the region of the Communicane, where the aid that can today be secured from the vital sciences is much less than in the region of Perceptane.

The best contrast we can make between the psychological and the sociological will be secured through an examination of the Communact in correlation with the Personan. Both Personan and Communact are selective observations of event. Both are activity and process. Both are presentations of functional factuality which scientific inquiry may proceed to use as its adequate techniques.

The Personan can be given a limited and imperfect presentation in the form of a 'bit of movement' such as that which the behaviorist selects for treatment as 'behavior itself.' The Communact can be given a similar presentation; indeed, we secured our early observations of it in precisely that form, keeping, however, always in mind that we were getting only a partial view—a special squint at it. So seen, the Communact exhibits what is perhaps the simplest and most readily available of all cases in which two or more men together (along with the intervening physical media of communication) form the minimal 'locus' of the event.

Take, now, both Personan and Communact in this way: namely, as preparations for study in a simplified mechan-

'knowing' against 'known'—is familiar enough, but it concerns the isolational presentation of Diagram A in chapter XXVIII. In our present procedure we are no more involved in its dogmatic renderings than we are in dogmatic renderings of the physical.

istic frame. One may, if one will, regard the Personan as nuclear to the Communact. 'Nuclear' is here a word of analogy from the cellular phenomena of physiology, as these are anatomically and mechanistically viewed. This analogy is legitimate enough if we take it with no greater stress than that definitely given it by physiology in the present working status of that science. The most competent physiologist would be the last today to be dogmatic in any assertion as to whether nucleus controls cell, or cell, nucleus; or whether, indeed, any emphasis on 'control' in such a sense is assuredly legitimate in the construction of vital events which his advancing research will most probably require.

If it is legitimate to examine and correlate Personan and Communact in a presentation of Euclidean space, preparatory to their joint advancement to a perfected form of observation, it is definitely illegitimate to contrast them in terms of 'single man' for the first, and 'two or more men' (or 'group') for the second, *as if* this manner of contrast had any high significance of its own. The contrasted terms, 'single man' and 'group,' are legitimate as designations of 'locus' in preliminary inspection; they are legitimate as guides to technically functional inquiry; and they will become legitimate for whatever coherent values future investigation may read into them. What is not legitimate is to proceed as if we today knew definitely the full factual import of either of these terms in separation from the other.

The most prevalent form of illegitimate procedure in this respect is the assumption that we today know what 'single man' means or 'is' to a degree much more certain than we know what 'two or more men together,' taken as a 'group,' means or 'is.' Examining the phenomenon 'single man' separately in the psychological field, we know that the more competent the psychologist, the less dogmatic he will be in his pronouncements, and the less assured he will feel that his knowledge today is precise and adequate. Competent psychological knowledge, and not incompetent guess-work or dogmatism, is what we need for our aid

when we examine 'group' phenomena in behaviors. The most competent psychology requires us to admit, at the start of any study of 'groups,' that we do *not* know today what 'single man' means in any basic sense. If we require both presentations, 'single man' and 'group,' for any piece of work under way, our duty is to let them enter on fairly equal terms, or, at the least, with full freedom for knowledge of either of them to be modified by the expanding knowledge of the other.

Personan and Communact, then, as we find them in behavioral space-time, are closely comparable in functionality of process and in factuality of selective observation. This meets two of our five requirements for the sociological technique, if it is to be an adequate complement to a psychological technique of research. With one other requirement we can have no possible difficulty: procedure in terms of the Communact will never pretend to annex the whole behavioral field, nor to acquire exclusive proprietorship over any one division of it.

How is it with the two remaining requirements: namely, that the sociological technique be equally firm with the psychological in its physical and vital setting and conditioning; and that, equally, it shall range the full behavioral field, though without exclusive control of any portion of it?

To discuss these questions we may broaden our form of expression and again speak directly of the sociological as communicational. This we may safely do, now that the Communact stands precisely before us in correlation with the Personan for the immediate purposes of our inquiry. The Communact is no more detached from the Communicane or from other social behaviors than it is from the organism. The Communicane is 'locus' for the Communact, though now, of course, with the word 'locus' implying a spatial-temporal frame of observation far richer and fuller than the skeletonized mechanistic frame.

The physical and vital conditioning of the communicational processes is guaranteed by our entire manner of ap-

proach to such phenomena. It is guaranteed by the postulation that has been adopted, by the technical methods of selective observation that are employed, and by the descriptions that are secured under such observation. Communact and Communicane are present solely in settings which comprise, not merely the living organisms, but directly in organization with them, the physical media of transmission as well. Inquiry by physiologists and psychologists into the organic and physical conditioning of the Perceptane is much further advanced, of course, than is the correlated inquiry into the organic and physical conditioning of the Communicane. The latter study is of much greater intricacy and delicacy, running as it does into regions such as those set before us by the words 'thinking,' 'conceiving,' and 'idealizing'; and it is represented today by little more than certain theories of connective neural structure in the more complex regions of the brain, and by some recent constructions of muscular organization. The difference here is, however, merely one of provisional status, and not one of decisive importance in functional differentiation of techniques. We may properly anticipate continued growth in definiteness for our knowledge of the organism with respect to communicational processes, along with an assured similar growth with respect to sensational and perceptual processes.

The sociological technique ranges the full behavioral field equally with the psychological technique. This statement is true both for factuality in functional observation and for technical organization of investigation. It would not be true if it were meant to apply to some enterprise of the type we have called gross description for a segregated area of investigative activity. In any such description, what is picked out as 'society' or as 'sociological' will not cover all of the psychological. But the converse is also true. What is picked out in gross description as a 'person' or as 'psychological' will not cover all of the sociological. Each of these forms of gross description, 'person' and 'society,' is useful at times and in places, but is defective for the wider purposes of investigation. The demonstration of

this we have found to lie in the existing inadequacy of psychology with respect to the social materials it is required to handle.

It is only where the psychological problem is functionally attacked, only where psychological *process* is technically and positively established, that psychological inquiry is able to range the full field of behaviors. It is under that same form of attack that the sociological techniques exhibit equally wide possibilities of range. The two assertions are complementary. If one is valid, then also the other. The first has a vague plausibility which the second lacks when either is taken crudely, but this difference has no significance for us one way or the other. Both assertions arise within our general postulation. Each of them requires specific extension of hypothesis for its own definite presentation and use.

To see the sociological technique as ranging the full field of behaviors we must take into account the various situations of interconnection examined in preceding chapters. Perceptane and Communicane are not sharply severed from each other, and are not capable of effective presentation in constructions of such segregation. We have found them, instead, to be closely interactive in a common behavioral field. This interaction we have examined especially in the cases of P-objectan and C-objectan, and we have found every reason to believe that the joint organization of the two forms of Objectan runs far backward in the evolutionary line. Taking into account, not merely the most highly differentiated linguistic forms of communication, but earlier communities of response and contactual process, and letting similarly the perceptual processes run correspondingly backwards through more and more elementary forms, we have found no justification for any sharp assertion that one of them is 'prior to' or 'basic to' the other. We cannot make sharp assertion on one side or the other, any more, perhaps, than we can say that organism is prior or basic to race, or race to organism. The behavioral processes on both sides run back into regions

that are marginal between the vital and the behavioral; and we allow them so to run, without arbitrarily cutting one short and permitting the other to continue. It is by taking all of these situations into account that, under special hypothesis, we regard the communicational as ranging the full field of behaviors functionally, but not with any private set of inclusions or exclusions of its own. It is the same set of situations, moreover, which is required for the hypothesis that the procedure of Personans must be applied over the entire behavioral field. Just as, on the one side, the Communact ceases to be a derivative or subordinate phenomenon, so, on the other, the Personan gains firmness and widened scope in its functional presentation and technical employment. No 'separate' men 'create' society; and no huge and strange 'societal' power subjugates the separate man, except as he himself participates.

We may now secure specification for the sociological technique of investigation in correlation with the psychological technique.

Within the full field of behavioral research, sociology differentiates itself by its functional use of the technical procedures of directly observable Communacts and Communicanes (including the Tn-phenomena, and such further extensions of communicational activity as may be established) as these are at work in populations durationally and spatially extended in behavioral space-time.

Thus established, the sociological technique, equally with the psychological, meets the requirements of all four sectors of mind-language difficulty. It is itself arrived at as the result of that very analysis through which the mind-language gains clarification. It has the defects neither of 'immateriality' nor of 'materiality.' It rests in a direct recognition and investigation of apprehensional activities as durational events, no more taken as 'secretions' of matter than as 'faculties' of mind. Itself freed from the dogmatic 'isolationalities' of the old language-forms, it never-

theless permits free functional specializations of inquiry for their replacement. It allows, in its use, for the needed transformation of the environmental situations of vital inquiry into those of behavioral inquiry.

Communications among men have been described as selective observations of functionally durational events; as aspectual facts rather than as discrete isolations; as the 'process' of all social behaviors; and thereby as the characteristic sociological techniques of inquiry in the behavioral field. Our postulation asserts that all of these descriptions are behaviorally interconnected, and that scientific progress requires progress in their combined coherence. We have next to consider more closely the word 'process,' and to indicate in what way communicational events are 'process' to all differentiated social phenomena, and thus to all specialized subject-matters of sociological inquiry.

The way in which the communicational processes are handled in the prevalent forms of sociological construction is at times astounding. Communications are neglected, subordinated, or degraded to such a degree that often they seem to be cancelled entirely from the finished scheme of interpretation. If, for illustration, we take the case of a highly specialized social science, such as the economics of a modern society employing a highly complex language, our own assertion will be that *all* of the presented scientific construction is functionally linguistic.' In prevalent constructions, however, the sociologist proceeds (*a*) as if his materials—his 'men' and 'things' and 'institutions'—make their contacts with one another directly, rather than by way of the technically linguistic process, and (*b*) as if he himself as scientist possesses, or has power to establish, a similar direct contact (non-linguistic or extra-linguistic) with his materials of inquiry.

6. Note that the above specification of the sociological technique in terms of a highly differentiated 'language' is limited to the particular social situation to which it is appropriate. To detach it or generalize it for all socially communicational situations would be to falsify it.

Such an investigator of course recognizes that men 'talk,' and that they employ talking and writing in their organized activities; but he treats this 'talk' as if it were some minor agency, some incidental connective device which, once used, could be forgotten. He proceeds to set aside a special compartment of sociology for 'language.' Probably also he sets aside another compartment for 'communications,' understanding thereby postoffices, telegraph systems, telephones, and much other modern 'structure.' In the field of gross descriptions no objection whatever can be raised to such departmental specializations. The trouble arises when the main characteristic of all social process and sociological technique is thereby caused to vanish from the direct work of interpretation.⁷

The sociologist surely must know that all of his observations are made in linguistically established forms. Surely he must recognize that all of his critical determinations proceed under a highly sophisticated use of language. If he will look closely enough, he will see that he has no direct behavioral facts in his subject-matters except such as are processed by language (or by wider communicational techniques, in those ranges of inquiry lying beyond that which we are for the moment considering). Sociology and sociologist alike are 'social' phenomena—presentations within the wide communicational involvements of 'society.' Without the sociology-behavior, the behavioral sociologist would gain neither specification nor name. The sociologist may give lip-service to the proposition that language and its more primitive communicational beginnings are requisite for any 'social,' but lip-service is not enough. He must put the proposition to work, and that thoroughly, if he aims at firm determination and construction.

7. Many essays and books are available which stress the bondage of men to words. They have a range from the oldest idols of the forum to the latest 'stencils.' Their presence does not supply the deficiency asserted in the text. They themselves need interpretation in a full communicational construction in which they appear, not as abnormalities or aberrations, but as specializations of process.

We know well enough why it is that the sociologist so often neglects this most pregnant aspect of his subject-matter. He is dominated by that 'isolationality,' that survival of the mind-language, which we so often have had to take into account. He introduces language *via* 'mind' or *via* mind-substitute, degrades it to the form of insignificant, transitional incident, and thus lets it disappear from his concentrated sociological attention. He discusses the references—the presumable contests—of verbal deliveries, taking them in detachment as if each such detached content were valid, or could be made valid, on its own account. In this procedure he imitates the extrapolations of the physicist, disregarding the enormous differences between the physical and the behavioral, both in factual presentation and in technique of inquiry. He remains at the same time a bond-servant to the old 'psychic,' even while he is perhaps vehement in his repudiation of the 'psychic.'

The simplest illustration of the default, the one easiest to follow, is provided by arithmetic. Consider $2+2=4$, and $2\times 2=4$. The 'numbers' here have the selective status of 'things,' while the operative signs, $+$, \times , and $=$, represent the connective language. In practical life and in minor mathematical employment one gets along very well by cancelling the operative signs as minor and incidental tools. The 'number-things,' in the form of 'quantities,' 'logical existences,' or whatever else, are assumed to have adequate stability for 'themselves.' Such a crudity, however, will not suffice at all for the mathematician as he grows in scientific power. 'Operation' more and more forces his attention until it comes to have the highest significance for him. He may be disturbed or hesitant in his generalizations *ex cathedra* about this 'operation,' but its actual behavioral status in modern mathematical development is unquestionable.

The situation for sociological inquiry is directly comparable with the mathematical situation, although, of course, at a much lower stage of development. The 'things' which the sociologist assumes as available for his direct

study when he cancels linguistic operation and technique are, scientifically, just not 'there.' They are not 'there' because the descriptions the sociologist gives them *qua* 'things' are grossly imperfect. His development of them in an assumed independence of their own leads to his interpretative chaos. When he begins to take them 'operatively,' 'communicationally,' then only will they begin to show firmness of texture for his work.

'Process' in behavioral inquiry is never some segregated phenomenon which is assumed to impinge upon other segregated phenomena and make them perform. Nor is it safe to differentiate 'process' too sharply from 'habit,' as if this 'habit' were an 'outcome' or 'product' which perhaps in its turn becomes 'cause.'

'Habit' is a word that performs, now in a vital setting, and now in a behavioral one. It is used most often in the hope that by a mere stress upon it as a word, the analysis of many difficulties may be evaded. Caution is necessary lest it be appealed to in a way that furthers obscurity, rather than clarity, in analysis.

By itself the word 'habit' presents no definite meaning. It simply sets a problem before us. It tells us merely that our inquiries are not concerned with accidental, ever-shifting, incoherent happenings, but rather with forms and types of event which we can recognize over and over again, and which have definite durational and extensional spread. Physical phenomena are in this way habitual, and so also are vital phenomena.

Entering the behavioral field, one finds the observer primarily obsessed with incidental aspects of his phenomena instead of with their great habitual presentation. We may perhaps best regard this obsession and the consequent distortion of observation as a modification, or a survival in disguise, of the old 'free-will.' Where he is under the influence of this obsession, the investigator applies 'habit' as a name of special limitation to phenomena which

he should instead accept most generally just as they come, since they are his typical behavioral presentations. Given a mechanistic space and a successional time, 'habit' is allotted a physiological fixation. Then, in this physiological form it is often assumed to provide an adequate explanation of the very content of behavior itself. Perhaps it is thus taken even to be a 'cause' of what happens in 'society.' This may be a satisfactory construction for certain very limited purposes; more widely seen, it is wholly unsatisfactory. Not only is the construction fictional in the independence it asserts for 'habits,' but its embedding in the vital is at best a mere over-night stop on the journey towards the required further specification of the vital in the language of physics.

Communicanes are behaviors: they are behavioral habits. So also are customs, cultures, and institutions; and concurrences, cooperations, and competitions. Perceptanes are similarly behavioral habits. If the term 'habit' is applied at all in the behavioral field, it must take into account just as much the Objectan-terminus as the Personan-terminus of the behaviors in question. Our phenomena come to us in preliminary description, and our obligation is to proceed with better analytic description. Our behavioral descriptions, if they are to have sound coherence, must confine themselves to the behavioral field until they can directly attain coherent organization with the vital and the physical.

For sociological behaviors all possible aid must be secured in terms of the Personans of psychology. However, to employ the word 'habit' with either physiological or psychological fixation, and to attempt to interpret the sociological phenomena in terms of such fixations, is not to secure the solidly analytic and functional aid that is required. It is an evasion of the problem, rather than progress towards its solution. It gives no proper presentation of the wide processes that we find at work in behavioral activity.

We say that all social phenomena are behaviors, and that all these behaviors are events. We say that communication is event, and that as event it is process to all of our specifications for settled social behaviors, such as cultures and institutions. We require some name, correlated with the word 'process,' which will enable us to set forth in the most general way the status of the social presentations that are thus communicatively processed. The distinction between 'process' and 'that which is processed' is one of selective observation; and our phenomena are functional as much in the one phase of selection as in the other. For the desired word we may use 'content.' We find, that is to say, many contents of observation across which we can trace the communicational technique of sociology.

The distinction of process and content, taken in this way, may be introduced by emphasizing what it is *not*. Consider, for example, the ancient distinction of form and content. Both members were there taken as instantaneously determinable, though with a certain perdurance allotted to form running far beyond that allotted to content. Consider a more recent distinction, that between function and structure. Here structure is taken as spatially instantaneous fact, while function is brought into contrast with it as running along lines of successional time. This distinction gave much aid to early anatomical and physiological studies, although it today retains no sound constructional value in biology where its legitimate application is limited to elementary pedagogy. Among comparable distinctions of more recent use, that between process (or function) and product has repeatedly attracted our notice.⁸ In this case it is the evasion of the requirements of spatial and temporal construction which is most pronounced.

8. Thus C. K. Ogden, "process and product"; and Madison Bentley, "P-function and product." The ancient distinction of 'mind' and 'matter' belongs with those of the text as arising similarly in considerations of 'process' under imperfect spatial and temporal formulations.

So far as modern scientific uses are concerned, all of the above distinctions arise under inadequate spatial and temporal presentations. We recognize that any distinction which we may ourselves set forth will, before many generations have passed, prove imperfect like the others. Nevertheless we do the best we can, and experiment with a distinction in which both members have full durational-extensional, and hence thorough functional, form. It is expressly in this frame of presentation that the words 'process' and 'content' are coupled and put to use. No fixities or rigidities of observation are here secured. Nothing is found that is always assuredly 'content' and never itself 'process' to other 'content,' and nothing that is always assuredly 'process' and never itself 'content' for other 'process.' This merely means that in investigating behaviors in behavioral space-time we find fields of influence radiating in all directions.

It is thus that Communact is process to all the contents which we observe selectively as customs, cultures, and institutions, or as concurrences, cooperations, and competitions. It is thus also that Communicanes are process, even at the very time that groups of them in settled cultural forms can be segregated for direct examination on their own account as contents of investigation. Many methods of differentiation between the leading forms of behaviors, socially presented, have been attempted. One of the earliest in definite development, although it was still in a semi-philosophical form, was that of Tönnies in which communities and cooperations were given comparative study. This has been widely imitated. Cooperations and competitions (or struggles) are frequently regarded as basic differentiations, although Simmel long ago showed that competitions, in order to arise at all, require settings of similarities just as certainly as do cooperations. For none of these distinctions is a radical bifurcation of sociological construction required. The communicational processes, provided direct observation is given them, play across all of these various fields, and frame the very ma-

terials which the minor forms of differentiation bring into contrast.

Under our prescription of meanings for 'process' and 'content' we may with entire propriety look upon Personan as process with respect to Communact as content. We may similarly look upon certain physiological activities as process with respect to Personan as content—this, of course, provided that we do not too rashly assume that we are adequately spanning the chasm between vital and behavioral descriptions and techniques.

When we take physiological activities as process, our direct coherent descriptions do not run beyond the vital. To apply these as process to the Personan requires a certain matching of descriptions without their full technical organization. We assume that our matching is proper, but we do not yet arrive at definite construction. When, however, we take the Personan as process to the Communact, we find no such chasm to cross by forced assumption. We are in the behavioral field with respect to both members of the comparison.

Why is it, then, that the technique of Personans is not adequate for the full behavioral interpretation, and that in addition we must employ a sociological technique, that of Communacts? The answer lies in the present status of inquiry and knowledge. So far as our present powers go, if we attempt to interpret all of our 'social' behaviors directly by the technique of Personans we have chaos. If we use the Communact, and make direct observations and interpretations, we have promise of results that are worth while. The 'social,' in other words, is found working directly in the Communact. If the social 'content' is read over upon the Personan, the Personan itself is falsified; it becomes merely a substitute for the old substantive 'psychic,' and its orientation towards the physiological does not rescue it from the pit into which it falls.

In the simple case one may readily discriminate between psychological and sociological techniques. Consider in il-

lustration an election day with voters going to the polls, but with many staying away, and with much complaint arising against these latter for not doing what, as citizens, they 'should.' An investigation is made of these behaviors in the full situation in which they are found. The voters have lungs and breathe air, and possibly there was an epidemic of influenza on election day; these are 'vital' conditioning facts, but not direct elements of the behavioral investigation. The issue voted on may have concerned public ownership of a coal mine; coal and land may be physically investigated, though it is not thus that they enter the behavioral inquiry, but instead, as Objectans of Communicans and Perceptans. The materials of inquiry are all behavioral.

In a common form of expression, the investigator may describe his inquiry as one into the 'psychology of voting' or the 'psychology of elections.' His mere choice of title has little interest for us, but if he proceeds to observe and reason as though the phenomena before him are specifically 'psychological' in terms of 'individual' human beings—if he feels that in this form he is going as 'deep' into his subject as is necessary, and that he is securing sound basis for drawing conclusions—then he will be greatly in error. He has been describing certain cases of highly specialized behaviors in a definitely localized region of behavioral space-time. If he is competent to deal with these behaviors in terms of Personans or other adequate organic reference, well and good; we need more knowledge of 'operative modes' than we possess, and whatever he contributes will be welcome. If not this, then what is required of him is that he establish his limited sections of behavioral space-time in their status within wider ranges of behavioral space-time, and that he make his construction and report therein; this work, efficiently carried through, would also be a most valuable service. If, however, he makes his report in confused terms, variously incoherent, without securing either

adequate organic or adequate social setting, the further value of his adventure into knowledge will be slight."

6. *Thinking, Thought, and Thoughts*

Consider separately the words 'thinking,' 'thought,' and 'thoughts,' taking 'thinking' as activity, 'thought' with substantive reference, and 'thoughts' to describe "what we think when we think," as the lexicographer so lucidly puts it.

'Thinking,' as activity, is behavioral. It is an 'operative mode' of the behaving organism. We obtain its description directly in terms of Personans, and not in terms of brain cells, muscle structure, or other physiological presentations. We study it, nevertheless, in close orientation to the organism, and we match our behavioral descriptions to whatever vital descriptions we find available. The study of 'thinking' is thus an excellent illustration of technical psychological research. As activity, 'thinking' is a typical subject-matter of psychology. Its status in this respect is today so clear that the word may be used in current inquiry and report with minimal danger of confusion.

9. A fair sample of such work, taken from the proceedings of a recent psychological convention, makes report upon the 'attitudes' of some ten thousand voters as attested by their answers to set questions about an election and its aftermath. These 'answers' are accepted as data at their face value, although they are little more than conventional mumblings, which need careful cleaning and mounting before they are examined. Conventional tags are used for their classification, but they are analyzed neither with respect to the prevalent systems of 'answerings,' nor with respect to the socially differentiated situations which these systems of answering represent. Neither psychological nor sociological inquiry is undertaken, the procedure being that of an exceptionally lifeless journalism. The outcome 'statistically' is that certain parts of the returns are found to be "even more unanimous" than others; and 'psychologically,' that "the only important general factor might be termed 'socialism.'" This sort of inquiry makes up a good part of the proceedings of our learned societies in the behavioral field, and serves as a fair index of their scientific status.

The word 'thoughts,' represented in the singular by 'a thought' or 'this thought,' is a necessary complement to the word 'thinking.' It presents 'contents' as set over against 'process.' "Contents of thought" is a common locution, and 'contents' is here used with a stress close to that which we have just assigned formally to the word. We may then examine 'thoughts' in further illustration of the differentiation between psychological and sociological techniques in behavioral research.

Our first necessary step is to expel permanently the word 'thought,' so far as it assumes that substantive form in which it has neither singular nor plural, but implies instead some form of personification. Our decree of expulsion pretends to no validity beyond the ranges of our own postulation; within this postulation it is irrevocable. The word that is thus forbidden is that 'thought' which presents the phenomenon in the ancient linguistic framework of 'faculty,' 'capacity,' 'act,' 'actor,' or 'product,' under all the obscure implications and shadings of these words. Here 'thought' may purport to be the intellect itself (whether in mental or physiological rendering), or it may be a 'capacity' of an intellect, or an 'act' performed by it. The 'thoughts' or 'ideas' which accompany such substantive 'thought' may be components of, or additions to, an assumed "stock of mental possessions," or they may be "lasting effects produced on the mind," or 'acts' *per se*, or 'products' of types which are homeless in the world of close observation and careful description.

We expel 'thought,' thus presented, but we must admit the phenomenal presentations, 'a thought' and 'thoughts,' and we must retain the old words to represent them, unless we proceed to construct new technical names in their stead. For our brief attention this is not necessary. The factual 'thoughts' are everywhere observed, however crudely, and the problems of their inquiry are everywhere recognized.

So far as our own examination is concerned, it is manifest that if we are to have anything whatever to do with 'a thought,' then 'that thought' must be observable. It must

be observable, moreover, not merely in vague affirmation, but in a definite description of the characteristics of its observability. In other words, we must be able to answer the questions "Where?" and "When?" when we say that we observe it. The 'quasi-localization' offered by such answers as "In a mind" or "In a brain" will not suffice. The required answers must display 'the thought' in its extensions and durations in a definitely presented construction of behavioral space and time. If we cannot make such answers, then either we must admit non-observability and exclude from consideration 'this thought' and all similar 'thoughts,' or we must continue our search until we discover the spatial and temporal frame which such 'thoughts' possess, and within which they can be displayed.

The old mentalist had no answers to questions of this type; indeed, his basic suppositions made the questions themselves meaningless. He accepted a primitive mechanistic space and time for 'nature,' but he kept his psychological and mental phenomena 'outside' of it. So long as they stayed 'outside,' then no matter how busily he might discuss the questions, none of his 'answers' could make sense.

In the 'isolationist' substitutes for the older approach, such as the mentaloid and neo-mentalist, the 'where' and the 'when' are unconcernedly taken as either 'in' or 'at' the organism. In this, however, there is no coherent answer to the questions of 'where' and 'when,' since the vital and behavioral descriptions are not themselves coherently organized with each other. The language of extensions and durations applies directly to the vital descriptions, or is taken as so applying, but it has no direct development for the behavioral descriptions.

The physiological isolationist has, of course, his way of looking at this situation. Generally speaking, he regards the vital descriptions as 'process' to the behavioral descriptions, the 'thoughts.' In this behavioral description he fuses both phases of selective observation: namely, the behavioral process, 'thinking,' and the behavioral contents, 'thoughts,' into one single presentation. He makes both 'the what one

thinks when one thinks' and 'the process of thinking' one single 'fact' of the organism's 'life.' He calls this consolidated, or rather, unanalyzed, presentation 'behavior.' He places it complete 'in' or 'at' the organism and accepts it thus as a property or character of the segregated organism.

We have no objection to a cautious use of the vital as 'process' to the behavioral. So far as the direct study of 'thinking' is concerned, our own analysis requires its orientation to the organism as closely as does the theory of any physiologist. The criticism lies against the rash extension of the construction beyond its proper observational range. Under our own manner of approach, when we say that the vital and behavioral descriptions must here be studied together, we do not at once assume that the full technique for the solution of the problem has been attained. Further, we do not assume naïvely that 'a thought' has some kind of a quasi-physical existence in a brain or other region of a body. We recognize the conditions of inquiry, and then proceed to the inquiry itself.

We have before us Perceptanes and Communicanes. Personans (and also Communacts) are phasal to them. But so also are Objectans. 'Thoughts' involve Objectan-phases as much as Personan-phases. If 'a thought' is so 'pure' that it has nothing of the Objectan about it, it strips down to the Personan as aspect or process, so far as any assured observation can reach. If one plumps the 'content' of 'a thought' into this Personan-form, what one gets is the non-observable, the non-factual—in short, an old 'psychic' lying beyond the operational field of any research such as we today call scientific.

Taking 'thoughts' as the 'content'—the 'what'—of thinking, we then examine them across the full range of the situations in which we find them. In vital inquiry, the living—the 'life'—of the organism is not a possession, or character, or property, of the organism alone, but an interaction with the environment, vitally taken. In behavioral inquiry, the behaving, including all of the phenomena of

thinking and thoughts, does not concentrate in the organism, but involves the environmental setting. This behavioral setting is not, however, that technical formulation of 'environment' which biology establishes for its particular needs; instead, it is a behavioral phase of the full behavioral situation. Knowledge of it must be acquired through behavioral analysis directly.

We thus have strong presumption for assigning every 'thought' to a 'locus' in the populations, spatially and temporally extended in behavioral space-time, with respect to which the participating thinking organisms, as separately selective presentations, are 'members.'

Consider now the status of these 'thoughts' with respect to language. The problem of "language and thought" has been widely discussed. The services of modern behaviorists in directing close attention to it are well known. The great issue, however, is not one between language and 'thought' in any isolationist or substantive sense of the latter term. It is instead an issue concerning 'thoughts.' The problem becomes one of communications and thoughts.

In this form of inquiry no demand for a determinative 'yes' or 'no' can possibly arise with regard to 'thoughts without words.' It is easy to set up for 'thoughts' a formulation which excludes 'words,' or for 'words,' one which excludes 'thoughts.' It is absurd to proclaim that whatever formulation one pleases to set up is a report upon reality. It is certain that in far-off regions of inquiry, marginal to the vital and the behavioral, there lie problems of a most difficult nature which will some day press sharply for solution. It is equally certain that guesses at answers should not dominate our work today.

We must recognize that, within the wide range of our observable materials, it is the common observation that what we call 'thoughts' appear, occur, are described, or are embodied in language. It is in this phenomenal setting, then, that our inquiries should be pressed and our constructions developed.

Language we have found to be communication, and thus to involve 'two or more men and the intervening air or other physical media' as its 'locus.' For it we have been able to obtain direct observation. Words have or are meanings, and thoughts are or have meanings, the phrase varying in each case according as one stresses the application of the word 'meaning.' Communication is the sociological technique, and 'thoughts,' as separately selected for observation, are contents within the sociological field of research, however deeply and inevitably the procedure of Personans is phasal to them.

In a crudely mechanistic space and time, thoughts cannot thus be envisaged. The framework is too narrow. The minutely sectioned bits of space and time are arbitrarily selected and wholly inadequate. They mutilate observation where they are forced upon phenomena which they cannot properly frame.

We must be able to see thoughts sociologically as vibrations or pulsations across communities. Thoughts always have durations; they are always events. They are neither fixities nor 'abstractions,' nor are they ever 'absolutely the same.' They flow; they are always in process of change. They have continuity across populations in this form of durational event. It is a continuity comparable to that of memory across an organism—no more startling, no more difficult to recognize, no safer to ignore.

Thoughts are in transformation always, but never violently so. The appearance of sharp change, perhaps a sudden breaking down of 'ideas' or a 'creative' intervention, is an illusion arising from some viewpoint, too closely limited, from which the observation is made. Consider, as an illustrative example, the argument developed by the present book as to 'individual and society,' with its immediate extension to the case of 'thinking and thoughts.' Seen from certain specialized points of view, the outcome of the argument may appear to have radical characteristics, perhaps vicious or erratic. Looked at more broadly, it shows itself to be nothing more than a slight modification in trends of observation and construction which have been steadily developing

across several generations. Further trends may be along a similar line or in some entirely different direction. Whatever developments come, or however many forms carry along side by side, each phase of development will participate in the progress of each of the others.

The phenomena are continuous. Mechanistic space and successional time make pretense of severing them into 'parts' called 'individual,' but though the sectioning is useful for many purposes, it is never adequate. A wider observation gives a far more useful picture. We may make various selective choices. We may specify 'a thought,' 'a recurrent thought,' or 'a line of thought.' In each case we disregard for the moment what is without significance for our immediate purposes and stress what is significant. In each case we proceed legitimately, provided that we do not proclaim our selective 'part' to be 'a whole' or 'the whole.' Thoughts, always processed in thinking, may, taken sociologically as contents, endure or build or transform; and it is legitimate so to study them.

In the constructions of both mentalist and mentaloid psychologies, the thinkings and the thoughts are inspected as evolving within the organism out of 'lower' psychological or organic activities. In both constructions the 'thoughts' have that strange characteristic of being 'products,' either as 'acts' or as 'secretions' of the organism. The 'thoughts' come to protrude far beyond the constructions of their presumable origin. We, in contrast, have no such break in presentation. The 'thoughts' are behavioral activities, as much at home in populations of organisms as are any other behaviors, and with no need of miraculous 'actors,' whether blatantly assertive or adroitly disguised, to 'produce' them.

This manner of presentation can have little significance for a reader whose own 'thinking' proceeds in a mechanistic pattern. If the world of his inquiry is before him as a griddle of hard facts sprinkled with spooky behavioral emanations, he will continue to let these emanations supply the 'system' required for his 'knowledge,' and will refuse to seek for 'system' as it must be learned from the observation and analysis of the phenomena themselves.

7. Behavior as Postulation

Psychological and sociological techniques of investigation are alike behavioral, diverging only in their methods of attack. They are alike in their insistence that they study only what can be observed, and as they can observe it. They proceed alike under hypothesis. By these very tests they become science.

To call them both behavioral, and thus to distinguish them together from the physical and the vital techniques, is not to assert that there 'exist' in the world some certain phenomena, namely, 'behaviors,' which are radically different from physical and vital phenomena. Behaviors are not before our consideration as 'facts' that are assured and distinctive in their own right. Instead, it is definitely by way of postulation that they—and, along with them, their very field of inquiry—secure their differentiation. In other words, we determine, as the outcome of long study throughout many centuries, that certain typical processes seem to be at work in the world. We assemble further instances in accordance with that determination; and we study these instances with a view to improved determination of the process. Action and interaction in the study of instances and organization go on together.

When one asserts behavior as a primarily known 'fact' and not as an instance of a postulated process, he usually does so in order to segregate that phase or 'part' of behavior which can most definitely be assigned to the organism, and to apply the name 'behavior' to that phase or 'part' alone. Where one does this—where he takes behavior in this way, even if merely as a casual slip of attention in reading—his understanding of the analysis we have been attempting will be destroyed. Only by keeping in mind the full situation of scientific inquiry, within which the behavioral processes are examined, can one secure safeguards against such mishaps.

What is true of the behavioral field of inquiry in this respect is true, of course, also of the physical and the vital. To separate three such fields of inquiry, and to work in a

construction of these three and no more, is itself a postulatory proceeding. Under our postulation, as we have developed it, this is the indicated pathway towards better knowledge.

Nevertheless, there is nothing in this assertion to condemn the alternative use of some different form of organization. Just as chemistry long seemed definitely separable in scientific technique from physics, so now it may seem to some workers that sociology should be placed as a fourth type of inquiry, 'beyond' the 'psychological' in much the same sense that the psychological is 'beyond' the vital, the chemical, and the physical. If the defective word 'beyond' is dropped, this would present a correlation of four typical branches of inquiry in place of the three we have used. The issue between the two methods of procedure is not one for quarrel. Each method is useful for certain purposes, and less useful for others. I suspect, however, that the expanded use of a fourfold organization would require, in the end, very sharp changes in the method of postulation we have employed.

The real test of the sociological technique which is here proposed will lie in its application to some special field of social investigation, now notoriously deficient in the organization of materials and in the competence of conclusions. For guidance in such further investigation, the present analysis is made.

XXX. SOCIOLOGICAL OBVERSE AND CONVERSE

The physical sciences deal with their phenomena in extrapolations; that is, in frames of maximum detachment from those human behavioral participations which we call experience, knowledge, and language. Where the behavioral sciences imitate this procedure and attempt rigid application of the pattern of extrapolations, the outcome for them is failure heaped upon failure. Even the simpler phenomena of psychology, those that can be studied in closest contact with physics and biology, remain resistant to the extrapolating descriptive form.

We have now to show how completely, within sociological inquiry, the constructions of extrapolation collapse. The outcome of the examination here will be the definite assertion that, whereas physical research strives always towards a single, consolidated, unitary frame of construction, sociological research requires the explicit, deliberate, and continuous use of a two-fold construction. For convenience we may name these two faces of sociological construction 'obverse' and 'converse.' They are faces that belong together, neither being capable of perfected presentation without the other. By 'obverse' we may understand the objectivized sociological observation and construction; by 'converse,' the sociological orientation of the observational procedure.¹

Let us approach the problem indirectly by inspecting a query frequently raised and vigorously discussed. Is sociology to be regarded as normative in its typical enterprise, or as descriptive?

Give a philosopher the word 'norm' with scope for untrammelled verbal development, and his discussion will quickly reach realms of the 'absolute' to which we cannot hope to follow. The issue has, however, a blunt, matter-of-fact formulation which may be substituted; namely: Does sociology deal primarily and fundamentally with the 'prac-

1. See the discussion of selective observation in chapter XXI.

tical,' or may it, like the established sciences, secure constructions of 'pure theory'? Under the postulation we employ, the 'purest' theory is regarded as descriptive; thus the two formulations of the issue coincide at one term of the contrast. At the other term we may be certain that the 'practical' contains all meanings of the 'normative' with which we can hope to gain contact in knowledge.²

When we inspect the scientific pursuits of modern times, a division of labor appears among investigators whereby their activities fall into two great groups. One group is supposed to occupy itself with 'pure science' in descriptive detachment; the other concerns itself with 'applied science'—with the 'practical'—in descriptions oriented to specially accepted situations of human living. The distinction between these groups is commonly treated as if it itself rested in 'pure theory.' We, however, must regard it rather as a distinction of a 'practical' type. It is, that is to say, a narrowly useful form of description, and not the most broadly useful form to which we can attain. Where the distinction is treated as 'theoretical,' the controlling influence comes from the isolational values of the old mind-language, and from the contrasts the mind-language makes between man's 'thinking' and his 'doing.'

In the physical field, 'pure' science contrasts with technology; in the biological field, with medicine or with pursuits like agricultural entomology. Such contrasts, however, are professional and academic—distinctions of technical interest, of specialization of inquiry, or of 'social status.' The theoretical in physics arises out of the practical and passes into the practical. The laboratory experimentation in which it rests is practical, if anything is practical; it proceeds directly by way of manual or other sense behaviors. The difference between theoretical and practical for physics may be formu-

2. Compare Titchener's view that all 'science' is description; also his manner of paralleling 'science' with a knowledge-system of 'values,' under distinctions rising directly from his 'isolationist' viewpoint. See chapter XV.

lated thus: Where examination is made in an explicit frame of maximum extrapolation, there we have the science of physics; where extrapolations are taken for granted, and the examination is oriented to specific situations of social behaviors, there we have a technology.

Turning to the behavioral field, the briefest consideration will show that one no longer finds even this limited degree of validity for the distinction between theoretical and practical. The distinction is not properly applicable to any of the primary presentations of behavioral observation or analysis. It loses all utility for the organization of 'facts,' becoming harmful rather than helpful.

Behaviors survey behaviors. Our phenomena in sociological inquiry are behaviors, whether they are men gathering berries, or men buying and selling wheat; whether they are men managing banks, or men theorizing about money; whether they are men in need of food, or men organizing agencies of social relief; whether they are men behaving institutionally, or men constructing a sociology; whether they are sociologists, or whether they are philosophers speculating upon the normative and descriptive within sociology. All of these behaviors, both in the surveying and in the surveyed, are intricately interconnected, and must be set before us in terms of Perceptanes and Communicanes, and in terms of Personans and Objectans. Among such forms of observation no radical distinction between the practical and the theoretical can arise. The most remotely theoretical activity is itself practical behavior in behavioral space-time. The most immediately practical behavioral activity involves the 'theoretical'—a reaching-out beyond the narrowly physical and vital. The investigator cannot place himself outside of the field of behaviors in which he is undertaking behavioral investigation. He is within society as a participant in its activities when he studies it. What he learns he must permit to appear as the framework of his own learning. His own background, his own setting, his own localization must come into account as one great phase of his activity. When he is theorizing he is practising; when he is observing he is doing

it within a frame of theory. When he reports factually upon what he observes, his report is always of fact as framed within his own socially framed and thoroughly practical activity of observing.

In rejecting the distinction between practical and theoretical—between normative and descriptive—in sociological research, we do it in terms of the contrast between physical techniques and behavioral techniques. At the same time we have denied to the distinction any ultimate significance even for physics. The status here must be clearly understood. Radically, as applied to knowledge in general, the distinction breaks down. Nevertheless, in the special scientific field of physics, where facts in constructive extrapolations are peculiarly examined, the procedures of theory can be practically separated from those of the application of theory, and the specialized framework of physical observation can be established in the former. In the field of sociological research, even this much of segregation can *not* be successfully accomplished. To attempt it results in a mutilation, not merely from the most general postulatory point of view, but from the actual working point of view of the science. To avoid this mutilation and its consequent defeat of scientific construction, the two-fold frame of obverse and converse sociological construction must be established and put to continuous use and development. It is not by copying the unitary framework of physical investigation that sociology can become scientific; but, instead, by absorbing the spirit of free and untrammelled enterprise whereby physics has constructed its own framework, and whereby sociology can establish in its turn the particular framework which its own fields of observation require.

Take an illustration from an immediately present situation. John Smith is a citizen of the United States. He uses money. This money is something that the rest of the citizens of the United States use in their dealings with one another. Smith, and the other citizens, and the money, and all their monetary behaviors, are today (1933) in bad state.

Hence the citizens are all arguing about that money and about themselves in connection with it; and they are debating their situation more widely and more vehemently, perhaps, than any body of citizens ever discussed the problems of money before.

Inspect these arguments, all the way from that of the most primitive 'more money' man, to that of the most obstinate 'hard money' man, or to that of the most elastic 'managed money' man. Every argument and every statement of 'fact,' as well as every specific 'use' of money, is made from a 'point of view,' a 'local' position, no matter how insistent the 'existential' assertion may be. It is futile for any man, even the most expert, to say outright: "Here are the facts." Other points of view always remain from which his asserted presentations are not assuredly 'the facts'; the points of view from which 'the facts' present themselves are different.

Can we find anywhere a construction which takes its own 'point of view' as fully and fairly and deliberately into account as it takes its purported extrapolated or objectivized monetary facts? I doubt it, even for the best exemplars of inquiry. We find, of course, the widest gradations between private pecuniary interest and integrity, between political quackery and earnest endeavor, and between ignorance and information, but nowhere do we find the full and exhaustive examination of what it is that the monetary 'expert' or 'enthusiast' himself represents in his observation and construction. It is by the test of this deficiency that the monetary theories fail to qualify as scientific in the broad scheme of knowledge we call modern science.³

The two outstanding features of construction which are necessary in order to acquire scientific (i. e., dependable) formulation of knowledge about money—or about any other

3. This should be modified, of course, by the recognition that the two-fold form of construction suggested in the test is almost at the point of breaking through the older bonds in the more highly cultivated fields of sociological inquiry. Otherwise I could hardly expect to know anything about it.

social phenomena—must be clearly recognized and distinguished.

In the first place, the 'money' that is being studied is a behavioral phenomenon, fully and completely, and nothing else. Physics can discuss gold and paper and treasury buildings; it can weigh and measure and detect and appraise movements from place to place; but it never presents any description of money, nor even the most fragmentary beginnings of such a description. The biological sciences can go not one step further. 'Money' is behavior. It is not behavior of 'man-alone.' It is 'men-in-action.' It is behavior at times and in places, for which calendar and map serve as but crude approximations to orientation. It is behavior in a space-time, within which 'meanings' contribute essential dimensional phases. It is behavior in a technically behavioral frame of observation. Its interpretation cannot be secured from either the physical or the vital alone, nor by adding bits of one to bits of the other, without a functional interpretation of the bits together. When such a functional interpretation is secured, it itself is that very 'behavioral' which we have been engaged in observing and establishing.

In the second place, all of our phenomena of investigation, as behaviors, have aspects of Personan as well as of Objectan. The sociological phenomenon, when itself made C-objectan before inquiry, is event in and for which the Communicane is itself functional. The sociological specialization of Objectan, that is to say, includes aspects of Personan. Now the psychological inquiry into Personans permits the observation and construction of Personane, not in the disjunctive sense, but as one of the outcomes of functional inquiry. Personane, thus established, itself appears in classifiable 'groups,' and these 'groups' again become sociological Objectans. The word 'group' is bandied about in sociological discussion in all sorts of ways and for all sorts of purposes, but we have here at least the beginnings of one sound usage. From it we can secure the presentation of that very 'point of view,' that localization of attitude, which becomes one phase of the two-fold sociological construction.

In a time of depression, the great majority of the citizens of a democracy such as the American are disillusioned about the pronouncements of national 'leaders,' even though the 'common' man's own equipment for observation cannot carry him beyond bare, though often noisy, suspicion. The man of fair information and of reasonably broad sources of information can watch the progress of events, and can fixate—pin down firmly upon his work-table—most public programs and arguments closely enough to enable him to dissect them, and to display fairly well what is 'behind them' or 'concealed inside them.' The specialized student, equipped with a comparatively impartial background, can go further; he can make definite studies of the balances of 'interests,' or 'powers,' or 'forces'—whatever his names for these situations may be—in his nation. If we are willing to take a still wider view, we shall see that our most erudite economic systems and theories themselves are all presented to us in a long series of special settings, of 'local' points of approach. They have appeared in terms of public revenues, of finance, of money, of the 'normal' business-man in *laissez-faire*, and in terms of a specialization called 'labor,' and of another specialization, a peculiarly legalized system of income-absorption and waste, called 'capital' or 'capitalism.'

Our requirement, then, is the closely specialized study of the complex backgrounds of interest, opinion, program, argument, and sociological construction, and the systematized organization of them in such a way as to present them as a full one-half of sociological inquiry in accompaniment to the other one-half—the objectivizations, namely, of social 'fact.' In part, and for minor purposes, this can be achieved by special hypothesis in a single-framed sociological form; it is no easy matter, however, even in a closely specialized case. The hypothesis may be "Assuming that men should eat," or "Assuming that business should go on in the way in which it was profitable for me in 1929." The difficulty is

4. This last characterization itself, it may readily be observed, is 'local' in its point of view.

to force home a recognition of the hypotheses at the points where they most strongly apply. Nevertheless, beyond all possibilities of such specialized hypotheses the need arises for a thorough organization of the situations which are called, in a different implication, 'the facts.'

We must face the condition that we, the investigators, are participants in what we investigate; that our participation is 'local' within it, not as a simple attachment to animal bodies in a mechanistic world, but in full behavioral presentation; that the definite determination of such localizations, however difficult, is essential to the interpretation of what we, thus localized, observe; that, if we can ever get away from such localizations, the attempt to get rid of them by dictum today is folly; and that the two-fold construction of the observation, in terms, on the one side, of what is observed, and, on the other, of the position from which the observation is made, is essential to any dependable knowledge of the kind we call scientific.⁵

Sociological construction, so framed, will appear in a series of levels or stages, oriented with respect to one another. We can pick out such levels in a given population for a given decade or generation, and widen them, either across the same population over longer periods of time, or across other populations for the same period. We may expect, as in other fields of investigation, to find our present-day analyses and our behavioral analogues of phylogenetic analysis proceeding with mutual aid. Pronouncements within any level we must expect to be limited in their valid factualities to the conditions of that level itself.

If the radical stress on the distinctions of 'practical' and 'theoretical' disappears from sociological construction, a new efficiency at once replaces it. All phenomena whatsoever under inquiry are behavioral events. Their durations are of the very essence of their observation. The 'present' is no magic bar separating a 'past' from a 'future.' The

5. See for approximations to this point of view my book *Relativity in Man and Society*, 1926.

events before us are read forwards as well as backwards. 'Purposive behaviors,' incompletely observable in the 'present,' stretch on into the 'future' in the full behavioral setting and technique. If the detached presentations of physical objects and human faculties disappear—if physical geography and motivation alike disappear as prior controls of sociological enterprise—their significance under observation nevertheless reappears in behavioral formulation in all behavioral research.

In earlier chapters⁶ the State was used for illustrative purposes: first, to show that unless it is observable in a frame of visibility it has no place in sociological or psychological construction; second, to show that if it is to retain a standing in research, its observability must be such as guarantees its direct factuality on a par with any of the other facts of science. We may now return to it, to indicate in a few words how it appears under the construction we have secured.

Whatever is to be the subject of inquiry under the presentation 'the State,' is 'event'; it is behavioral event; it is before us in the durations and extensions and in all the 'meaningful' dimensions of behavioral space-time. If we secure it in this way, we have it as observable and as factual, within a frame of construction which permits nothing alien to the procedures of observability and factuality.

We have rejected all forms of the isolated 'psychic,' not only because they are discredited in modern knowledge, but because their verbal aid is wholly unnecessary for the description and organization of the phenomena under inquiry. To reject the 'psychic' is, however, to reject its correlate, the 'non-psychic material.' Whatever was once indicated by the word 'matter' has now for its substitute whatever physics by its technical procedures can set before us. But physics cannot set before us the behavioral phenomena of the State. And biology cannot set them before us. The State must be behaviorally investigated.

6. Chapters XXI and XXII.

We have no State as Objectane. Its examination must be in terms of Perceptane and Communicane, with its special techniques of inquiry arising under the latter of these two forms. Except as communicational in all its process no such presentation as the State is obtainable that can possibly meet the requirements of modern scientific investigation. There is no 'abstract' State. There is no State as 'concept.' Even the 'moi' of Louis was a better description of the State than these. But the 'moi' of Louis was not the only 'moi' of his own State in his own day. Every 'moi' counted. How they all count is the problem of inquiry in this specialized field. They do not count as detached 'subjects' nor as detached 'objects,' but in full communicational interconnection. This is the central field of analysis; it is itself the technique of analysis.

As we pursue the analysis we find the State as Objectan, but we cannot fixate it as *one* Objectan. It is a great complexity of Objectans. We must cease, not merely to see it as Objectane today, but even to carry on investigation under some far-off ideal of Objectane which science some day may or should attain. We cancel altogether that procedure of hoped-for Objectane. We are left with the fully functional organization of Objectans to which, in their functional presentation across an appropriately extended duration and space, we give the name of the State. It is thus that the obverse and converse sociological procedures must be carried along together for the full course of the inquiry, the observations always in orientation to the observing, whether with reference to the 'citizens' as the sociologist holds them off at arm's length, or with reference to his own construction, as the sociologist recognizes himself as inevitably one 'citizen' among many. We still objectivize the State, but we permit our objectivization to correspond to the full functional complexity of observation.

Since the State is a highly advanced process within populations, the presented materials of inquiry come almost wholly in the explicit linguistic forms. There is little occasion to deal directly with the more subtle forms of com-

munication. This does not mean that the State is mere 'language' in some cruder sense of the word 'language.' Quite the contrary. The State as 'abstract,' as 'concept,' as 'Objectane,' is 'mere language,' and that in a crude and already antiquated form. Such a State is a bit of linguistic magic. The State as it is seen in fully functional linguistic procedure is, on the other hand, the State for which full observability and factuality can be attained.

Not facts in maximum detachment, but facts in closest living experience, are what sociological research must seek and employ. The status of its facts must appear in its constructions. So long as any investigator continues to believe that he can definitely determine social fact, whether as 'true' or 'right,' or as 'actual' in the sense of full extrapolation, he will fail, not only in securing the success he desires, but, what is of immensely greater importance, in his approach to the organization of his own results with those of other investigators. The goal of perfected extrapolation is the destruction of sociological progress in knowledge.

XXXI. CONCLUSION

We live in a world of facts which are our deepest concern. In this living among facts our behaviors evolve.

These facts are not known to us in fixed, external form that endures from past generation to present, and on into future, unchanged.

What was 'fact' to men of a hundred thousand years ago is not assuredly fact to us today. Much that was 'fact' to our grandfathers has ceased to be fact to us. We may even project our construction of a world of fact back into an era when fact, as fact of experience and knowledge, first made its entry. What will be 'fact' to our grandchildren we do not fully know; much less, what will be 'fact' to men ten thousand years from now.

We have long since ceased to regard 'ourselves' as, in space, at the 'center' of the universe. We have still to achieve a comparable diminution of our 'selves' in our moments of time to fleeting phases of that universe. We have yet to learn to abandon belief in our presentations of today as binding knowledge for men of the future.

We 'ourselves' are facts in this world of fact. Our 'selves' are changing facts. 'Souls,' 'minds,' 'personal actors,' 'brains': these are but four transformations of our factual inspection of ourselves in a middle range of human history—in that particular range which we know best. Far back in the past lies much still to be studied and appraised; ahead lies much for which we can make but the briefest anticipatory forecast.

'Existential assertion,' 'fact in extrapolation,' and 'fact to us' are three great stages in the progress of man's knowledge of the factual.

With the progress of the physical sciences, the earlier realistic assertion of natural existences faded to a bare absolutism of space, time, and matter. Now these, in their turn, are passing into relativities; yet the relativities still

hope to persist as facts in extrapolation—as facts external to man's knowledge and to his behavior.

These extrapolations are nevertheless facts only '*to men*'; and, we may well believe, only to men who, with respect to their '*selves*,' are still at the stage of existential assertion, be that assertion as frank and outspoken as '*soul*,' or in disguise as futile as '*brain*.' Strip our own '*selves*' of the crudities of existential assertion, bring them under research in a clarity of observation akin to that which has been secured for physical nature, and the very footings of '*fact in extrapolation*' will disappear.

The task of science then becomes one of reformulation—a reformulation wherein the '*facts to us*' will be freed not only from the existential stresses, but from the stresses of extrapolation as well, in order thereby to grow immensely in firmness of research and interpretation.

We postulate the uniformity of knowledge, but not the subordination of all knowledge to a '*nature*' that is but a passing presentation of one of the phases of knowledge. We postulate system in knowledge, comprehensive and free, but not restriction to the mode of a day, whether that day be yesterday, today, or tomorrow. We work today as best we may. We postulate our observation as selective, as attained only in that system of living and of work which itself is what we study.

We exhibit knowledge as presented to us in language, and as evolved in language. We exhibit it as the pronouncement of men who are themselves participant phases of that universe which in their knowledge they survey. We exhibit it as offering their '*local*' point of view in that universe. We take these men, not as separate existences, ultimate judges of the universe, each for himself, but as we find them in communication with one another. We take their sharply specialized communications, those of their most highly developed language, not as magic '*acts*,' but as behaviors in evolution. We stay within our sphere and make no pretense of deciding upon beginnings or ends, creations or destinies, ultimates or reals, neither as they concern our '*selves*,' nor

as they concern any other of our 'facts.' We call this combined affirmation and restriction 'science'; by this name we understand the best knowledge we have, the most coherent, the most dependable, the best frame of our behavior.

So proceeding, we find a field of behavioral inquiry which is akin to the two other great fields of human inquiry, the physical and the vital; and which, like them, is capable of its own techniques of observation and description—of descriptive analysis and descriptive synthesis. We pursue the study of the behavioral, and let the outcome for all three fields of study—physical, vital, and behavioral—develop as it may.

We accept the interactional psychology, in which organism and object combine with joint activity in the perceptual processes wherein 'things' appear, inorganic, organic, and behavioral alike.

With advancing powers of observation we identify communicative behaviors that are as deeply rooted in our living as the perceptual. We study *dicauds* and other forms of *Communacts*. We study *Communicanes*. We find actively under way among them wide-flung processes demanding inquiry in behavioral space-time, where formerly 'qualities of souls,' 'cognitions of minds,' or 'thinkings of brain' were crudely posited.

We are free, then, to investigate both *Perceptanes* and *Communicanes* wherever we can observe them, and in whatever forms of organization. We may examine all science as presented to us in *Perceptanes* and *Communicanes*. Again, we may study these latter as themselves presented in the formulations provided by the other sciences.

We are free to study the phenomena of society, those called social, without arbitrary severance of individuals from masses, and without the equally arbitrary severance of individuals or masses as self-subsistent facts from other facts assumed to be self-subsistent over against them. In the forms of behavior we find the individuals, the masses, and the facts of their experiencing and knowledge presented in common system, to which comprehensive study must be given in parallel with studies in physical and vital forms, if knowledge is to advance freely.

INDEX

- Abstract, 190, 209, 318
- Act, 80, 237 ff., 241, 247, 269, 288, 337
- Activity, 34, 49, 66, 69, 205, 240, 319 f., 337
- Actor, 208, 238, 241
- Adler, 14
- an, 267
- ane, 266
- Animism, 296 f.
- Apprehensionality, 28, 89
- Aristotle, 23, 145, 155
- Aristotelian, 23, 26, 49, 51, 108, 155
- Aristotelian Effect, 155, 159, 231, 271, 282, 341
- Artifact, 182, 314, 328
- Aspect, 115, 141, 161, 319
- Avenarius, 118
- Behavior, v, 10, 22 f., 52, 127, 151, 192, 209, 230, 262 ff., 296, 320, 328, 372 f.
- Behavioral Space-Time, 149, 158, 213, 233, 243, 254, 262, 270, 281, 291, 308 ff.
- Behaviorism, 10 ff., 52, 58, 62, 85, 93 f., 103, 210, 211, 245, 262, 337
- Bentley, A. F., 24, 99, 149, 154, 157, 219, 330, 332, 343, 381
- Bentley, M., 6, 14, 19, 43, 67, 74 f., 79, 82-88, 91, 95, 96, 100, 102, 103, 226, 326, 337, 339, 361
- Boring, 15, 34
- Brett, 14
- Bridgman, 158, 176, 182
- Calendar, 242
- Carr, 14
- Carrel, 312
- Cause-Effect, 318, 330
- Chwistek, 154
- Coghill, 312
- Coherence, 12, 132
- Comte, 59
- Communact, 251 ff., 258, 265, 350
- Communican, 269, 287, 344
- Communicane, 251, 258 ff., 265, 293 ff., 348 ff.
- Communication, 6, 108, 249 ff., 346, 356
- Concept, 176, 190, 218, 305 f., 318
- Concrete, 114 f., 209, 286
- Conscious, 83 f., 326
- Consistency, 12, 132
- Content, 361 ff.
- Conversational Remark, 206 ff., 211, 213, 215, 221 ff., 229, *see* Dicaud
- Coordinates, 178
- Cosmos, 171
- Credit, 220
- Crime, 220, 228
- Crowd, 294 f.
- Dashiell, 13, 14, 19, 38-43, 50, 55, 70, 71, 85, 86, 100, 101, 106
- Definition, 137, 318
- Dewey, ix, 6, 7, 14, 19, 37, 67, 74-81, 84, 88, 91, 96, 99, 100, 102, 103, 104, 192, 326, 337, 339, 340
- Dicaud, 231 ff., 242, 248, 265, *see* Conversational Remark
- Dicaudane, 233, 265
- Dimensions, 175, 178, 314, 317
- Disjunction, 30 f., 136 f., 139 ff., 181, 216, 265, 286, 318, 330, 341 ff.
- Dunlap, 14, 19, 37, 37, 71-73, 95, 100
- Duration, 75, 156, 242 f., 254, 261, 283, 311
- Durkheim, 194
- Environment, 31, 44, 46, 50, 64, 76, 85, 89, 104, 312, 330, 339, 368 f.
- Etymology, 234, 236, 239, 250
- Event, 53, 210, 280, 319, 321, 381
- Existence, 156, 162, 195, 273, 300, 304, 372, 385
- Experience, 77, 135, 142, 166
- Fact, 115, 135, 152 ff., 158, 168 ff., 181, 188, 217 ff., 220, 228, 237 ff., 321, 377, 385
- Flugel, 14
- Functional, 265, 318, 323, 346, 362
- Galileian, 97
- Genetics, 164, 227
- Gest, 256, 265

- Gestane, 265
 Gestalt, 17, 34, 212
 Group, 295, 351, 379

 Habit, 95, 359 f.
 Haldane, 201, 312
 Historical, 209, 347
 Hughes, 78
 Hunter, 6, 14, 19, 37, 38, 43-47, 50,
 51, 58, 99, 100, 103, 263, 339

 Implicit, 38, 55
 Individual, 68 f., 106, 110 f., 187,
 216, 230, 267, 270, 284, 295, 324,
 332, 334, 338, 351
 Integration, 73, 102
 Introspection, 349
 Isolationality, 29 f., 105 ff., 123

 Jacobson, 207
 Janet, 14

 Kantor, 13, 14, 19, 40, 41, 55, 79,
 89-97, 98, 100-104, 291, 315, 337,
 339, 340, 348
 Kelley, 15
 Knowledge, v, 135, 143, 152 ff., 163,
 181, 317
 Koffka, 15, 16, 17, 34
 Köhler, 15, 16, 34
 Kornilov, 15, 17, 103
 Korzybski, 154, 155

 Language, 5, 6 ff., 22 ff., 33 ff., 45,
 55, 58, 62 f., 96, 131, 145 ff., 215,
 234 ff., 317 ff., 356 ff., 369, 386,
 see Mind-Language, *see* Physi-
 cal Language
 Leeuwenhoek, 199
 Lemon, 30
 Levy, 30, 134
 Lewin, 97 ff.
 Lewis, 182
 Lillie, 311
 Lindemann, 319
 Local, 170, 273, 278, 308, 381
 Luria, 340

 McDougall, 16
 Margins, 289, 330, 355, 369
 Mathematics, 24, 99, 358
 Matter, vi, 7, 330
 Mauthner, 155
 Maxwell, 319
 Mead, 6
 Meaning, 4, 131, 146 f., 232 f., 280,
 313 f.

 Mechanistic, 52, 101, 261 f., 272,
 318, 332, 370, *see* Newtonian
 Mentaloid, 41, 106
 Metaphysics, 342
 Mind, 7, 29, 106, 131, 303, 309, 315,
 358
 Mind-Body, 28, 32, 102, 106
 Mind-Language, 26, 88, 309
 Money, 220, 328, 377 ff.
 Murchison, 13

 Nafe, 16
 Naming, 231
 Nature, 177 ff., 275 ff., 316, 386
 Neo-mentalistic, 70, 106
 Newtonian, 25, 93 f., 168, 243, 258,
 279 f., 297, 308, *see* Mechanistic

 Object, 28, 37, 72, 86, 128, 232,
 264, 268, 285, 304 f.
 Objectan, 268, 271 ff., 275, 278,
 285, 287, 293 ff., 368
 Objectane, 269, 287, 341 ff.
 Objective, 37, 91, 267
 Observability, 54, 68 f., 189, 198 ff.
 Ogden, 13, 14, 19, 38, 47-49, 50, 51,
 101, 361
 Organism, 312, 334
 Organism-as-a-Whole, 36, 56, 69,
 118
 Organism-Object, 28, 90, 103
 Organismic, 91

 Part-Whole, 211, 215, 261, 276,
 290, 318
 Particular, 165
 Passivity, 241, 274
 Pattern, 7, 73, 102
 Pavlov, 14, 16
 Percept, 304
 Perceptan, 269, 287, 344
 Perceptane, 267 f., 289 ff., 293 ff.
 Perception, 28, 289
 Person, 105 f., 109, 144, 288, 318,
 322, 334, 353
 Personan, 267 f., 287, 291, 333 ff.,
 336 ff.
 Personane, 269, 288, 333, 335,
 341 ff.
 Phase, 319
 Philosophy, 113, 125, 136, 161
 Physical, 190, 192 f., 309 ff.
 Physical Language, 26, 30
 Physics, vi, 8, 25, 133, 175 ff., 214,
 224, 306, 309, 331
 Poincaré, 153

- Postulation, 131 ff., 275 ff., 302, 329, 372 f.
 Prince, 14
 Process, 361 ff.
 Products, 49, 87, 190, 236, 247, 361
 Psychological, 190 f., 225 f., 230, 323, 328, 336 ff.
 Psychology, vi, 3, 326
 Purpose, 271 f.
- Race, 11, 284, 301, 323, 329, 332, 347, 354
 Reality, 33, 137, 286
 Relation, 157, 318 f.
 Relativity, vi, 279, 385
 Richards, 47
 Russell, 176
 Sander, 16
- Schniermann, 16
 Science, viii, 107, 114, 122, 163 f., 171, 174, 223, 386
 Scientific Effect, 155
 Scientific Fields, ix, 104, 133, 192 f., 282, 307, 316, 372 f.
 Scientific-Linguistic, 4, 23, 26, 108, 161
 Selective Observation, 195, 211, 242, 261, 284, 332 f.
 Semantic, 154
 Senses, 163, 167, 181, 189, 300
 Simmel, 362
 Social, v, 31, 42, 59 ff., 63, 68 f., 81, 103, 116, 134, 188, 194 f., 198, 225 f., 228, 230, 295, 325, 328
 Social Psychology, 182, 326
 Sociality, 223
 Society, 61, 165, 353
 Sociological, 323, 326, 345 ff., 355
 Sociology, 69, 187, 326
 Space-Time, vii, 33 ff., 75, 101, 203, 233, 309, 316, *see* Behavioral Space-Time, *see* Vital Space-Time
 Space-Segmentation, 36, 54, 90, 100, 232, 245
 Spearman, 15, 16
 Speech, 199, 206, 214, 231, 234 ff., 247, *see* Language
 Scriptilect, 252 ff., 265
 Scriptilectane, 265
- State, 198 f., 218 ff., 382 ff.
 Stimulus, 37, 41, 61, 70, 72, 77, 128
 Subject, 28, 305
 Suggestion, 296
 Summaries, 100 ff., 131, 165, 187, 215, 247, 284, 385
 Swann, 164
 System, viii, 160, 211, 302
- Tarde, 294
 Things, 265, 288, 300, 341 ff., 358 f.
 Thought, 6, 58, 149, 165, 247, 365 ff.
 Time, *see* Space-Time, Behavioral Space-Time, Calendar, Duration, Event
 Titchener, 6, 7, 13, 111, 112-126, 171, 263, 276, 375
 Tönnies, 362
 T-phenomena, 256, 265
 Tn-phenomena, 265
 Troland, 16
- Uniformity of Knowledge, 193, 195, 275 ff., 329, 386
 Uniformity of Nature, 94, 115, 120, 275 ff., 281, 386
 Units, 314 f.
 Universal, 165
 Universe, 170
- Value, 113, 123
 Vital, 190, 193, 289, 316
 Vital Space-Time, 311 ff.
- Walter, 43
 Washburn, 14, 19, 56-58, 86, 100, 102, 263
 Watson, 14, 19, 54-56, 57, 86, 100, 226, 246, 263, 337
 Weiss, 14, 19, 58-65, 69, 77, 81, 87, 95, 96, 100, 103, 116, 226, 263, 294, 326, 339, 340
 Whole: *See* Part-Whole; *see* Organism-as-a-Whole; Activity as a Whole, 66; Individual as a Whole, 69; Implicit Wholes, 56; Conversational Remark as a Whole, 210
 Woodworth, 6, 14, 19, 67-71, 73, 83, 100, 102, 106, 112, 324

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